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Notes on the Languages spoken by the various tribes inhabiting the valley of Asam and its mountain confines. By WILLIAM ROBINSON, Inspector of Government Schools in Asam.

The study of the affinities of languages has always been acknowledged to be one of importance. When properly applied, it cannot fail to afford an unerring test of the truth or falsehood of traditionary evidence : and without its aid, it would sometimes be impossible to unravel the mysteries of contradictory testimonies respecting the relations of the different races of mankind.

Yet no one branch of study, probably, is attended with greater difficulties in the prosecution, especially as regards the languages of unconnected and barbarous tribes, remote from all contact with literature or civilization. It is seldom to be expected that points of resemblance can be found sufficiently numerous to afford any thing like demonstrative evidence of the affinity of languages under these circumstances. And even where we do meet with identity in any given number of words in any two languages, nothing can be inferred from this coincidence, respecting the relation of those two languages. For, if the fancied resemblance or identity of a certain number of words,—unless, indeed, the proportion be very considerable—were to be esteemed a sufficient proof of their having been derived from a common stock, it would follow that more than half the languages of the universe would exhibit traces of such connection, in whatever order we might pursue

the comparison. For, in the migration and intercourse of nations and tribes, nothing is more common than the permutation of letters and the borrowing of words, causing an appearance of affinity where in reality none exists. It is, therefore, only to an essential affinity in the structure and genius of languages (coupled with verbal coincidences) that we can appeal for certain evidences of a common origin.

Setting out from the establishment of a certain number of separate languages as species, we may adopt the tests of affinity proposed in Adelung's *Mithridates*, and proceed to comprehend in the description of one *family* such as have more coincidences with each other than diversities; and refer to the same *class*, such families as exhibit any coincidences at all that are not fortuitous, imitative (that is, from onomatopoeia,) or adoptive. But, these tests depend so much on the progress of our knowledge in the study of each language, that the results must unavoidably be liable to great uncertainty and fluctuation where our acquaintance with the languages is superficial, so that we can reasonably expect nothing more than an approximation to an arrangement completely methodical.

The writer, therefore, whose attention has been but lately drawn to the languages of Asam, and whose opportunities for studying them, have been but few, begs here distinctly to disavow any intention of attempting to trace the languages he treats of to their sources, or to explain their affinities. So important an undertaking, may be much more rationally expected from the united labors of many than from the feeble efforts of a single individual. Yet it is obvious that the task never can be accomplished unless efforts are made by individuals for communicating such information as they may have opportunities of acquiring, and though the writer may have failed in laying open the real nature of each language, he would indulge the hope that there is yet such a foundation laid, as will eventually secure its being done.

Proceeding now to the examination of the languages spoken in Asam, and by the tribes bordering on the valley, the one that naturally claims precedence is the **ASAMESE**.

It is the language usually spoken by the entire population of the valley, and in most cases, is the only medium of intercourse used between them and the people of the hills.

With the exception of the Bengali, there is probably no derivative

of the Sanskrit, that bears a closer affinity to its parent, so that nearly four-fifths of the words in common use are pure derivations from that stock. Like its cognate the Bengali, it admits of the introductions of Sanskrit terms with such facility, and to so great an extent, as to be capable of conveying ideas with the greatest precision, thus adding considerably to its copiousness.

Whether it be a direct derivative of the Sanskrit, or only a corrupt dialect of the Bengali, has been questioned. It seems highly probable, however, that a careful investigation will conduce to the support of the latter supposition; for there does not seem to be a greater diversity between what are usually considered the *provincialisms*, spoken in the remoter parts of Bengal,—in Chittagong and Silhet for instance,—and the unadulterated Bengali of Nuddeah (where the language is said to be spoken in its purity), than between any of these and the dialect of Asam.

From the circumstance of the country having from time immemorial been governed by rulers of Shán origin, it is somewhat surprising that more traces of their language are not to be found in the present dialect of the Asamese. The very small proportion of words that may be traced to Tai origin, appear for the most part to be adventitious. This might serve to show that long previous to the invasion of the Shán conquerors or the inroads of the hill tribes, the valley was inhabited by a race intimately connected with Bengal or Berar, and this conjecture would seem to be confirmed by the traditions of the old kingdom of Kamroop, and several antique Hindu remains in the most remote parts of the valley, which have but recently been brought to notice by the archaic researches of Major Hannay.

After a careful comparison of the Bengali and Asamese dialects, we make no hesitation in asserting, that, except with slight variations of pronunciation, upwards of eight-tenths of the most common words are identical. So strong an affinity may not be perceptible on a cursory inspection of any given number of words taken from the two languages, in as much as the secondary forms in current use in Bengal would most likely be overlooked, and these, in many cases, come far nearer to the Asamese terms than those words commonly used in Bengali composition.

For the purpose of comparison, a list of words in both the Bengali and Asamese dialects is here subjoined. And, the more clearly to

exhibit the analogy between the two dialects, those secondary forms alluded to, and which have thrown considerable weight on the result of the comparison, have been introduced into the Bengali column.

It is necessary, however, to observe that in romanizing Asamese and other languages hereafter treated of, the vowels are used in accordance with their classical pronunciation on the continent of Europe; and where these are not sufficient to express the vowel sounds in use, diacritical marks have been introduced to supply the deficiency. The fundamental vowel sounds are as follows:

A sounded as in agreeable, or u in but.		
á	„	far.
e	„	men.
é	„	they.
i	„	pin.
í	„	pique.
o	„	not.
ó	„	note.
u	„	pull.
ú	„	rule.
ü	„	French u, or German ü

The consonants are used as in English. G is always hard. H, used after another consonant, shows that it is aspirated; thus, kh is sounded as in pack-horse; th, as in pot-house, &c.; ng, is sounded as in singing. N (with the dash under it) as in infant (French).

In the expression of diphthongs, it is necessary to combine the vowels in such a manner that they shall express the same sounds when united as they do when separate.

Comparative List of Words.

<i>English.</i>	<i>Bengali.</i>	<i>Asamese.</i>
Air.	Báyu, Bát, Bátásh.	Botah.
Ant.	Pipiliká, Pinpará.	Poruá.
Arrow.	Tir, Shár.	Kánr.
Bird.	Pakhi, Chiriyá.	Charái.
Blood.	Rakta, Tej.	Tej.
Boat.	Nouká, Ná.	Ná.
Bone.	Asti, Hár.	Hár.
Buffalo.	Mohish.	Moh.
Cat.	Birál, Myáo, <i>a cat's mewing</i> whence, myáokári, <i>the mew-</i> <i>er</i> , and thence.	Mekuri.

<i>English.</i>	<i>Bengali.</i>	<i>Asamese.</i>
Cow.	Goru.	Goru.
Crow.	Kák, Káuri.	Káuri.
Day.	Dín.	Dín.
Dog.	Kukur.	Kukur.
Ear.	Karna, Kán.	Kán.
Earth.	Mritiká, Máti.	Máti.
Egg.	Dimbha, Dim.	Koni, Dim.
Elephant.	Hasti, Híti.	Híti.
Eye.	Chókhyu, Chók.	Sók.
Father.	Pitá, Báp.	Bápu.
Fire.	Agni.	Jui.
Fish.	Matshya, Mách.	Más.
Flower.	Pushpa, Ful.	Ful.
Foot.	Charan, Pad.	Bhóri.
Goat.	Chágal.	Ságal.
Hair.	Kesh, Chul.	Sul.
Hand.	Hát.	Hát.
Head.	Mastak, Múr.	Mur.
Hog.	Shukar, Baráh.	Gáhori, Baráh.
Horn.	Shringa, Sing.	Hing.
Horse.	Ashwa, Ghorá.	Ghorá.
House.	Griha, Ghar.	Ghar.
Iron.	Lowha, Lohá.	Loh.
Leaf.	Patra, Pátá.	Pát.
Light.	Dipti, Pohor.	Pohor.
Man.	Purush, Mánush.	Mánuh.
Monkey.	Bánor, Bándor.	Bándor.
Moon.	Chundra.	Jun.
Mother.	Mátá.	Ái.
Mountain.	Parbbat.	Parbbat.
Mouth.	Mukh.	Mukh.
Musquito.	Moshá.	Moh.
Name.	Nám.	Nám.
Night.	Rátri, Ráti.	Ráti.
Oil.	Tóil, Tel.	Tel.
Plantain.	Kalá.	Kolá.

<i>English.</i>	<i>Bengali.</i>	<i>Asamese.</i>
River.	Nadi, Nai.	Nói.
Road.	Pat, Bát.	Bát.
Salt.	Labau, Lón.	Lón.
Skin.	Charmma, Chhál.	Sál.
Sky.	Akásh.	Ákáh.
Snake.	Sarpa, Sáp.	Háp.
Star.	Tára.	Tará.
Stone.	Prastar, Shilá, Sil.	Hil.
Sun.	Súrjya, (Belá, <i>time.</i>)	Beli.
Tiger.	Bágh.	Bágh
Tooth.	Danta Dánt	Dánt.
Tree.	Brikhya, Gách.	Gach.
Village.	Grám, Gán.	Gán.
Water.	Jal, Páni.	Páni.
Yam.	Álu.	Álu.

The *written characters*, in use among the Asamese, are the same as those that obtain in Bengal, with one or two slight variation. The *powers* of the letters are also the same, except the substitution of S in Asamese for the Bengali Ch, and a guttural H for the Bengali S and Sh.

The *principles of Grammar*, are alike in both the languages. Both have the same rules for the inflections which words generally undergo in order to describe various actions and circumstances, though there exists some diversity in the inflections themselves.

The analogy by which nouns feminine are regularly formed from nouns masculine, is the same in both languages. Thus both have,

<i>Masc.</i>	Harin,	a deer.	<i>Fem.</i>	Harini.
<i>Masc.</i>	Kukur,	a dog.	<i>Fem.</i>	Kukuri.

As in Bengali, so also in Asamese, the names of some of the most common male and female objects in nature, are applied quite absolutely, and without any relation to one another. It must however be observed that the Asamese, far more often than the Bengalis, distinguish the sex of animals by prefixing the terms Matá and Máiki, *male* and *female*.

The seven *Cases* stated to belong to Bengali nouns, are the same in number and order with those of Asamese nouns, but the terminations by which they are discriminated are somewhat different, as shown in the following paradigms.

Kukur a Dog.

BENGALI.	SINGULAR.	ASAMESE
<i>Nominative.</i> Kukur.	<i>A dog.</i>	Kukur.
<i>Accusative.</i> Kukurke.		Kukurak.
<i>Instrumental.</i> Kukurte.	<i>By or with a dog.</i>	Kukurere.
<i>Dative.</i> Kukurere.	<i>To a dog.</i>	Kukuraloi.
<i>Ablative.</i> { Kukurere or Ku- kurhoite.	<i>From a dog.</i>	Kukurarpara.
<i>Genitive.</i> Kukurer.	<i>A dog's.</i>	Kukurar.
<i>Locative.</i> { Kukurere or Kuku- rete.	<i>In a dog.</i>	Kukurat.
<i>Plural.</i>		
<i>Nom.</i> Kukurera.		Kukurhat or Kukurbilák.
<i>Acc.</i> Kukurerdigake.		Kukurhatak or bilákak, &c.
<i>Inst.</i> Kukurerdigete.	<i>By or with dogs.</i>	Kukurhatere.
<i>Dat.</i> Kukurerdigere.	<i>To dogs.</i>	Kukurhataloi.
<i>Abl.</i> Kukurerdighoite.	<i>From dogs.</i>	Kukurhatarpará.
<i>Gen.</i> Kukurerder.	<i>dog's.</i>	Kukurhatar.
<i>Loc.</i> Kukurerdigete.	<i>In dogs.</i>	Kukurhatat.

The *Comparison of Adjectives* in Asamese is effected by a similar process to what may be termed the secondary form in current use in Bengal, that is, by prefixing áru *more*, to the Positive, to form the Comparative, and atí, *very*, to form the Superlative.

The Bengalis have two kinds of *Personal Pronouns*. The one used to express superiority or honor, the other inferiority or contempt. We find this degrading consequence of aristocracy in the Asamese pronouns also, but only in those of the 2nd and 3rd persons.

*Bengali.**Asamese.*

1st Person Honorific, Nom. Ámi.

Acc. Ámake, &c.

Inferior, Nom. Mui.

Acc. Moke, &c.

2nd Person Honorific, Nom. Tumi.

Acc. Tomáke, &c.

Inferior, Nom. Tui.

Acc. Toke, &c.

3rd Person Honorific, Nom. Tini.

Acc. Tánháke, &c.

Inferior, Nom. Tihá.

Acc. Táháke, &c.

Nom. Moi.

Acc. Mok, &c.

Nom. Tumi.

Acc. Tomák, &c.

Nom. Toi.

Acc. Tok, &c.

Nom. Tenó.

Acc. Tenók, &c.

Nom. Hi.

Acc. Ták, &c.

The oblique cases of pronouns, in both languages, are formed exactly as those of nouns.

The inflections of Asamese *Verbs*, and the difference between them and those of Bengali verbs, will be best indicated by the following comparative scheme of their verbal terminations.

Kara, Do.

INDICATIVE MOOD.

Present Indefinite.

<i>Bengali.</i>		<i>Asamese.</i>	
Honorific.	Inferior.	Honorific.	Inferior.
1. Kari.	Kari.	1. Karon̄.	_____
2. Kara.	Karis.	2. Kará.	do. Kara.
3. Karen.	Kare.	3. Kare.	_____

PRESENT DEFINITE.

1. Karitechhi.	Karitechhi.	1. Karison̄.	_____
2. Karitechha.	Karitechhis.	2. Karisá.	doing. Karisa.
3. Karitechhen.	Karitechhe.	3. Karise.	_____

AORIST.

1. Karitám.	Karitám.	1. Karilon̄hentēn.	_____
2. Karitá.	Karitis.	2. Kariláhentēn.	did or would do. Karili-hentēn.
3. Kariten.	Karita.	3. Karilehentēn.	_____

IMPERFECT,

1. Karilám.	Karilám.	1. Karilon̄.	_____
2. Karilá.	Karili.	2. Karilá.	did. Karili.
3. Karilen.	Karila.	3. Karile, or karil.	_____

PRETER IMPERFECT.

1. Karitechilám.	Karitechilám.	1. Karisilon̄.	_____
2. Karitechilá.	Karitechili.	2. Karisilá.	was doing. Karisili.
3. Karitechilen.	Karitechila.	3. Karisile.	_____

PERFECT TENSE.

1. Kariáchi.	Kariáchi.	1. Karison̄.	_____
2. Kariácha.	Kariáchis.	2. Karisá.	have done. Karisa.
3. Kariáchēn.	Kariáche.	3. Karise.	_____

PRETER PLUPERFECT.

1. Kariáchilám.	Kariáchilám.	1. Karisilon̄.	_____
2. Kariáchilá.	Kariáchili.	2. Karisilá.	had done. Karisili.
3. Kariáchilen.	Kariáchila.	3. Karisile.	_____

FUTURE.

1. Karibo, or karimu.	Karibo.	1. Karim.	_____
2. Karibá.	Karibi.	2. Karibá.	will do. Karibi.
3. Kariben.	Karibe.	3. Kariba.	_____

IMPERATIVE MOOD.

1. Kari.	Kari.	1. Karon.	
2. Kara, or kario.	Kar, or karis.	2. Kará.	Kar.
3. Karun.	Karuk.	3. Karok.	

PARTICIPLES.

<i>Present.</i> Karite, <i>doing.</i>	Karibaloi, or kará, <i>doing.</i>
<i>Past.</i> Krita, <i>done.</i>	Krita, <i>done.</i>
<i>Continuative.</i> Karite Karite, <i>continuing to do.</i>	Karonte karonte, <i>continuing to do.</i>
<i>Adverbial,</i> Kariyá, kari, karile, <i>on doing or being done.</i>	Kari, karilat, karile, <i>on doing or being done.</i>

GERUNDS.

Karite, <i>for the purpose of doing.</i>	Karibaloi.
Karibá, <i>doing.</i>	Kariba.
Karibár, <i>of doing.</i>	Karibar.
Karibáre, <i>in doing.</i>	Karát.

The rules for syntactical construction are the same in both languages. In the ordinary colloquial use of the Asamese, deviations from the strict rules of syntax are very frequent, but not more so than in that form of Bengali prevalent among the lower classes in various parts of Bengal. I refer particularly to the vague and indiscriminate use of the two classes of idioms, termed by philologists, the *analogous*, and the *transpositive*.

The following specimeus of Bengali and Asamese composition, have been furnished to illustrate our remarks on the analogy between the two dialects :—

ENGLISH.—“*Influenced by no fear, he offered outrage on others, seized their property by force, gave false evidence to secure advantage and benefit to himself, and committed various other enormous crimes.*”

This sentence, in the more dignified Bengali style, would be rendered—

“Se sarbbatóbhábé nirbhay haiyá parer daurátmyamátra kare, balete paradrabyápaharan kare, mithyásákhyá diyá swalábh swarakhyá kare ebang ár ár náná prakár mahápatak kare.”

In common Bengali it would run thus :

“Se kichhui bhay ná kariyá parer prati daurátmya kare, bal kariyá parer drabya káriyá lay, mithyá sákhyá diyá ápanár lábh o ápanár rakhyá kare, ebang ár ár náná prakár mahápáp kare.”

In Asamese :

“ Hi eku bhai ne khái parar uporat dushtáli karc, balere parar bostu kárri loy, misá hákhi diyá ápunár lábh áru ápuuár rakhyá kare áru ár árharah páp kare.”

The Lord's Prayer in Bengali.

“ He ámarder swargastha pitah, tomár nám pújya hauk ; tomár rájatwa hauk ; ár tomar ichelhá swargete jeman, temani prithibíteo saphal hauk. Ámarder prayójaníya áhár adya deo. Ár ámrá jeman ápan aparádhidigake khyamá kari, tadrup tumio ámarder aparádh khyamá karo. Ebang ámárdigake paríkhyáte ánió ná ; kintu manda haite rakhyá kara. Rájattwa o gaurab o parákram e sakali sadákále tomár. Ámen.”

The Lord's Prayer in Asamese.

He ámar swargat thoká pitri, tomár nám pújya hauk ; tomár ráijya hauk ; ár jenc swargat tene kuí prithibít o tomár isshá púr hauk. Áji ámar khábar beháni ámak díá. Áru jenekni ámar dhóruáhontok ámi hohun, tenekui ámar dhár erá. Áru ámak paríkhyáloi ni nibá, kintu ápadar pará ámak rakhyá kará. Rájatto, áru mahimá, áru prabháo ei kakaló hadái tomár. Ámen.

All the other languages that will uow come under consideration, may be divided into TWO GREAT CLASSES ; those connected with the Thibetan, and those deriving their origin from the Tai or Shyan stock.

They all nevertheless approximate toward the Chinese colloquial system, and more or less possess the characteristics of being originally *monosyllabic*, and all *intonated*. Those arranged under the second class are also *destitute of inflections*.

The origin of the intonations common to these languages, may in all probability be found in the extremely limited nature of their colloquial medium, occasioned by their confining themselves wholly to a monosyllabic system. The number of their monosyllables must naturally be very limited. On a new object being presented to the mind, it becomes necessary to give it a name ;—the possibility of uniting two or more syllables to form a word never occurred to them, they must therefore have recourse to a monosyllable already in use, and their ingenuity exercised to invent a method of diversifying these monosyllables. This is done by adding to it, *force, length, or rapidity of pronunciation*.

These intonations, depending as they do only ou a modified action of those parts of the larynx, which most immediately affect the voice,

are, in general, exceedingly difficult for a European practically to distinguish. On a careful examination, however it will be found that these tones do not in reality exceed *four*, and that they are the same as those described by Chinese philologists.

The *first* of these, may be said to be pronounced naturally, as a middle tone, even and moderate, neither raised nor deepened by any peculiar effort.

The *second*, is a strong, rough, and vehement sound, produced by strongly exciting the action of the glottis in emitting it.

The *third* tone, is formed by raising the action of the glottis as in forming the second tone, and then somewhat relaxing it, which, while it lengthens the sound makes it end rather feebly.

The *fourth* tone may be characterized as a short, thick, hasty sound, which seems to re-enter the throat, so as at length to be stopped in it. To distinguish this peculiarity, so very common to these languages, it is proposed to place a dot under the final letter.

The prevalence of these intonations, in all the languages spoken by the tribes bordering on the valley of Asam, leaves us at no loss to trace the source from which they have sprung. They evidently bear affinity to the Chinese, however much they may have subsequently been affected by any foreign mixture.

In languages, where those terminations and inflections which render so copious the grammars of the Greek and Sanskrit are almost unknown, there can be little room for grammatical disquisition. Of the two parts which form the basis of philology, it is evident that the inflections and terminations of any particular language furnish the materials for its *peculiar* grammar; hence, where these are wanting there can be left us little beside a few ideas that relate to *general* grammar.

Principles of grammar must necessarily be inherent in every language. But the various rules to which words are subject in order to describe various actions and circumstances, as they constitute the peculiar grammar of any language, can seldom be transferred from the grammar of one nation to that of another. Hence if a language have no inflection to express case, gender or number in its nouns, or mood, tense, and person in its verbs, the language would only be distorted by an attempt to throw its grammar precisely into the form of Latin or Greek grammars for instance, which have inflections for all the more important

parts of speech. The writer's object on the present occasion, has therefore been, to show how people, who make use of none, or but few of these inflections, make their language subserve the same purposes to them, which languages abounding with inflections accomplish for other nations, and this, if fully done, he trusts will lay open the peculiar grammar of each language sufficient for all purposes of investigation.

In attempting to do this, however, with the languages selected for examination, a difficulty meets us at the very onset.

In a cultivated language there generally exists a certain fixed mode of expression, used in standard works of literature, which may be considered as the standard of style,—deviations from which must be sensibly perceived, and regarded as uncouth and improper. Where such works exist, examples taken from them amply suffice for exemplifying the various peculiarities of grammar; but the following remarks can be deduced from no such solid principles. In languages so rude as to have never been reduced to writing, our examples of grammar must be drawn from conversation, often incorrect, and always fluctuating. Add to this, the speakers themselves are so ignorant of the theoretical construction of their own language that they are unable to give the enquirer the least information respecting its grammatical principles. The only plan left the writer therefore, was to collate a number of words and sentences arbitrarily, and then by patiently comparing these sentences together to deduce from them the system on which they are founded.

PART I.

Having offered these preliminary remarks, we proceed now to the consideration of the BHOTIA LANGUAGE, more commonly designated
THE THIBETAN.

A copious and elaborate grammar of this language has been already laid before the public by M. Alexander Csoma De Kőrös, and to that work, the student must be referred for a clear exposition of all its peculiarities. Our remarks therefore will be very concise, touching only on those points on which information may be requisite to aid in instituting a comparison between this language and the dialects spoken by the adjoining tribes.

Facts seem to indicate, that there was a time when all the countries west and south of China, up to the very borders of Bengal, used the

Chinese colloquial medium. In after ages however, some great and important event—probably the introduction and spread of Buddhism,—seems to have carried the Sanskrit alphabetic system into these countries, and to have caused its adoption in those nearest to Bengal, with such alterations however, as were necessary to accommodate it to the colloquial medium already current in them. This we find to be the case with Bhotan, where the colloquial medium, which, for ought we know, may have been prevalent in the country from time immemorial, refuses to be identified with the Sanskrit alphabetic system, and has such firm hold on the country, as to induce the inhabitants while they receive the Sanskrit alphabet, to reject some of the letters wholly, and change the sound of others which they still retain.

The literature of Bhotan, having for a long period of time, been connected with that of India, if not entirely derived from it,* it cannot be expected that the language continues to be a purely monosyllabic one. It may perhaps be better represented as a connecting link between the polysyllabic and monosyllabic languages.

The alphabet is derived from the Nágri or Sanskrit system, and some of the letters resemble the corresponding ones in the Bengali alphabet. It contains eight series, the last of which has only two powers. The first four of these are the K, T, Ch, and P series, common to both the Sanskrit and Chinese system; but the alphabet is alike destitute of the F series of the Chinese system, and of the double modification of the T series, found in the Sanskrit system. The fifth series of this alphabet, Tz, Tzh, &c. is evidently the Ts, Ts'h series of the Chinese system; and amidst the sixth and seventh, vestiges of the other sibilant series may be traced.

But the most singular feature in this descendant of the Sanskrit system is, that the four first series, instead of possessing five letters, like the Nágri alphabet, have only *four*, the second aspirate in each series is wanting, as it is in the Chinese system too, the first and third letters of each series have pretty nearly the same sound affixed to them.

OF NOUNS.

Gender, in nouns, is usually expressed by the addition of the word *pó*, *male*, or *mó*, *female*, before or after the noun. Example :

* If coeval with the introduction of Buddhism, it must have been between the 7th and 8th centuries of the Christian era.

Khyi, *a dog*, masc. Pó-khyi. Fem. Mó-khyi.

Phág, *a hog*, masc. Phág-pó. Fem. Phág-mó.

These words are also frequently employed as emphatic particles denoting a person or thing especially, or in an eminent degree. E. g. Mi, *a man*, Mi-pó, *the man*. Má, *a mother*, Má-mó, *the mother*.

In the *Declension* of nouns, the same form is adopted as that in Sanskrit, and its derivatives, that is, the addition of certain post-positive particles.

The following is the general form of declension, according to which adjectives, pronouns, and participles, as well as nouns, may be declined.

Terminations.

Nominative, and Accusative,

Genitive,	kyí, gyí, gí, yí, or í.
Dative,	lá,
Ablative,	lá, or ná.
Instrumental,	kyí, gyí, gí, or í.
Locative,	lá, ná, hu, du, ru, or su.

The plural signs in general use are, nám, dág, chág, signifying *all* : to these the above particles are added as in the singular number.

N. B. If the word end in dh, b or s, the genitive must be formed by kyí ; e. g. Khyodh, *you* ; Khyood-kyí, *your* ; gyáb, *side* ; gyáb-kyí, *of a side*. Yás, *the right* ; yás-kyí, *of the right*.

If the word terminate in gh, or ng, the genitive must end in gí ; e. g. Káng, *a foot*, Káng-gí, *of a foot*.

If the word terminate in a vowel the genitive is to be expressed by í, or yí ; e. g. Má, *a mother* ; má-í, *of a mother*, chu, *water* ; chuyí, *of water*.

If the word terminate in n, m, r, l, the genitive case must be expressed by gyí ; e. g. Shár, *the east*, Shár-gyí, *of the east*, &c.

If the word terminate in gh, or p, the locative case must be expressed by tu.

If the word end in ng, d, n, m, r, l, the locative case must be expressed by du ; e. g. Mur-du, *in haste*. Sóng-du, *in a vessel*.

Chyim, *a House*, is thus declined.

Singular.

Plural.

Nom. Chyim, <i>a house</i> .	Chyim-nám, <i>houses</i> .
Gen. Chyim-gyi, <i>of a house</i> .	Chyim-nám-gyi, <i>of houses</i> .
Dat. Chyim-lá, <i>to a house</i> .	Chyim-nám-lá, <i>to houses</i> .

Abl. Chyim-lá, <i>from a house.</i>	Chyim-nám-lá, <i>from houses.</i>
Acc. Chyim, <i>house.</i>	Chyim-nám, <i>houses.</i>
Instr. Chyim-gyi, <i>with or by a house.</i>	Chyim-nám-gyi, <i>with or by houses.</i>
Loc. Chyim-du, or Chyim-lá, <i>in a house.</i>	Chyim-nám-due, or Chyim-nám-la, <i>in houses.</i>

OF ADJECTIVES.

Adjectives generally stand after the nouns they serve to qualify ; as in *Mi ngám, a bad man* ; *Kháng záng, a good house*. *Lung nág, a black valley*. They are sometimes used before the noun, but in the latter case have the definite particle in the genitive form annexed ; as in *Záng mi, a good man*, or *Záng poi mi*.

When an adjective is used substantively, so as to denote the abstract quality, it takes after it the particle, *Nying*. Thus, *Nág, black*, *Nag-po, the black* ; *Nág-po-nying, blackness*. *Slá, easy*, or *Slá-po* ; and *Slá-pó-nying, easiness*.

Adjectives are formed from substantives by the addition of the genitive sign. *Shing, wood* ; *Shing-gi, wooden*. *Ser, gold* ; *Ser-gyi, golden*. *Mi, man* ; *Miyi, human*.

Negative adjectives are formed by the addition of *med, má, mi, midá, mi-máng, yá, &c.* Thus, *Nor, wealth* ; *Nor-med, destitute of wealth*. *Thá-yá, without end*. *Tshul-med, irregular*. *Mi-rung-po, inconvenient*. *Má-min-po, unripe*.

Comparison is expressed by prefixing the words *je, more*, and *ráb, most*, to the adjective ; as *tho, high* ; *je-tho, higher* ; *ráb-tho, highest*. More commonly however, the terms *lá, pá, or bá*, signifying *than* or *more than*, are put after the name of the person or thing to which comparison is made ; *Ngá-pá-khyód-che, Those art greater than I*. *Di-lá-de-zang, That is better than this*. The superlative, or a comparison with totality, is expressed by *thám-chád-lá, or kun-lá, than all*. *De kun-lá che-o, or thám chád-lá che-o ; that is greater than all, or that is the greatest*.

The numeral system, of the Bhotias, consisting of decades, is exceedingly simple. The cardinal numbers are as follows :—

1. Chi.	4. Zi.
2. Nyi.	5. Ngá.
3. Sum.	6. Tu.

7. Dün.	32. So-nyi, &c.
8. Gyed.	40. Zi-chu.
9. Gu.	41. Ze-chi, &c.
10. Chu, or Chu-tám-pá.	50. Ngá-chu.
11. Chu-chi.	60. Tu-chu.
12. Chu-nyi, &c.	70. Dün-chu.
20. Nyi-chu, (<i>two tens.</i>)	80. Gye-chu.
21. Nyer-chi.	90. Gu-chu.
22. Nyer-nyi, &c.	100. Khyá.
30. Sum-chu.	1000. Tóng.
31. So-chi.	

The unit following the decade in regular order.

There are no ordinals.

The numerals, when put in conjunction with a noun, require that the noun, (which is always put before it) be in the singular number; as, *mi chu, ten men. Lo khyá, a hundred years.*

OF PRONOUNS.

The Bhotias, like the Chinese, have a variety of terms to express the PERSONAL PRONOUNS.

There are no less than six to represent the *first person*. These are:

Ngá, and Dág,	in common use.
Khópó,	masculine.
Khó-mó,	feminine.
Nged,	the honorific.
and Ráng,	used emphatically.

The terms used to denote the *second person*, are Khyod, which is commonly used, and Khyed, expressive of civility.

The pronouns of the *third person*, are Khó, most commonly used for both the masculine and feminine.

Kho-pá,	masculine.
Kho-má,	feminine.
Khong, used respectfully.	
Khong-pá, Ditto.	masculine.
Khong-má, Ditto.	feminine.

They are all declined according to the scheme given above for the declension of nouns.

The personal pronouns in the genitive case, are used as POSSESSIVE PRONOUNS.

The DEMONSTRATIVE PRONOUNS are, Di, the proximate, and De, the remote.

The INTERROGATIVES are, Su, *Who?* Gá, *which?* and Chi *what?*

OF VERBS.

A word, in Bhotia, expresses an idea, without reference originally to any part of speech; its grammatical structure being determined wholly by the connection in which it stands. With reference to the Verbs, it may also be remarked, that it is in general, the connection in which they stand which determines them as being active or passive, neuter or causal. There are, however, certain words, which are constantly used as auxiliaries, and which therefore assist in forming the various parts of the verb with which they are conjoined.

Verbs admit of no terminations expressive of persons or number, these points being generally denoted by the context.

Not unfrequently, what in English is termed the SUBSTANTIVE VERB, is expressed in Bhotia by the reduplication of the final letter of a word, with the addition of the vowel o. *Examples:* Sum, *three*; Sum-mó, *there are three*.

Shing, *wood*; Shing-gó, *it is wood*.

Nág, *black*; Nág-gó, *it is black*.

Mád, *true*; Mád-dó, *it is true*.

Verbs which denote an action affecting others, may from their signification be termed ACTIVE VERBS. And those that simply denote an action, without requiring an object, may be termed NEUTER.

The PASSIVE voice is formed by constructing the verb with another denoting *to do*, or *to make*. The phrase, "*thou art beaten by me*," would be thus expressed, Ngás khyód dung-pár chyed-do, literally, "*thou by me a beating done*."

CAUSAL VERBS are formed by the addition of the verb Jug-pár (*to put, to cause, to make*). Thus; Bri, *write*; Bri-jug-pár, *cause to write*.

Bhotia verbs have nothing in them analogous to conjugation, as exemplified in Greek and Sanscrit verbs. Yet as the various modes of expressing the same action, and distinctions of time, are essential to language in general, we shall endeavor to show how they are denoted in this language.

The Indicative Mood requires no explanation. As it merely indicates or declares a thing, it is necessarily the verb in its simplest state.

The *Present Indefinite*. Gró, or Gró-wá, sometimes pronounced Dó, or Dówá, *I go, thou goest, &c.*

Jyed, or Jyed-wá, *I do, thou doest, &c.*

The particle wá, here used, is properly speaking an emphatic particle.

The *Present Definite*, is expressed by the reduplication of the final letter, as already noted.

Ngá dó-ó *I am going*. Khó dó-ó, *he is going*.

Ngá jyed-dó, *I am doing*. Khyod jyed-dó, *thou art doing*.

The *Imperfect* is formed by the addition of the verb Dug-pá, signifying *to sit, to exist*.

Ngá dó-dug-pá, *I was doing*.

Khó jyed-dug-pá, *He was doing*.

The *Perfect tense* is formed by the addition of the word Sóng, signifying *a departing or passing away*. Dó-sóng, *went*.—Nga jye-song, *I did or have done*.

With reference to the first example, it may be remarked that Sóng, by itself, is more frequently used instead of the form above given, as the perfect tense of the verb *to go*; dó-sóng, being now obsolete, but commonly used as a verbal noun, signifying *gait, or the manner of going*.

The *Pluperfect* tense is expressed in the following different forms. Ngá song-wá-yin, or, Ngá song-dug-pá, *I had gone*.

The auxiliary Yin, has the same signification as Dug, *to be, to exist*.

Ngá jye-dug-pá, or, Ngá jye-pá-yin-pa, *I had done*.

The *Future tense*. Ngá dó-pár-jyeur, *I shall go*.

Ngá jye-pár-jyeur, *I shall do*.

Here, dó-pár, and jye-pár, are the gerunds, signifying *to go, and to do*; and the auxiliary jyeur, signifies, *a growing, a becoming*.

PARTICIPLES.

Present. Dó, or Dópá, *going*. Jye, or Jye-pá, *doing*.

Past. Sóng-pa, *gone*. Jye-dug-pá, *done*,

GERUND.

Dó-pár, *to go, for the purpose of going*.

Jye-pár, *to do, for the purpose of doing*.

The Imperative Mood. As in English, the only instance in which this mood really exists is in the *second person*. In commanding and entreating it is obvious, that we address only the second person, the first, and the third persons of the verb in this mood, being formed by an address to the second ; hence the simple verb is used in the second person, and another verb signifying *let, permit, &c.* is introduced in the first and third persons. This double mode of forming the imperative is found in the Bhotia also. *Exam.* Dó, *go*, Jye, *do*. Ngáh, *laugh*, &c.

In the first and third persons, the verb Zi, *to permit*, is introduced ; thus, Dó-zi, *let me*, or *let him go*. Jye-zi, *let me*, or *let him do*. Ngáh-zi, *let him laugh*.

The Potential Mood, which both in English and Latin, includes a great variety of ideas, may in Bhotia be expressed by words signifying power or capacity, duty or obligation, doubt or uncertainty.

In the structure of sentences, nouns in general precede their attributes, and the verbs stand at the end of the sentence, having their qualifying adverbs placed immediately before them.

A few of the Bhotia *partieles*, in common use, are here subjoined.

ADVERBS.

Nám.	<i>When ?</i>	Dáng.	<i>Yesterday.</i>
Gáng-tshe and Gáng-du.	<i>At what time.</i>	Sáng.	<i>To-morrow.</i>
Di-du.	<i>At this time.</i>	Náng-mo-lá.	<i>In the morning.</i>
De-tshe.	<i>At that time.</i>	Nu-mo-lá.	<i>In the evening.</i>
Nám-yáng.	<i>Never.</i>	Rim-gyi.	<i>Gradually.</i>
Deng, or Ding, or Deng-tshe.	<i>Now.</i>	Ring-pár.	<i>Speedily.</i>
Dá-Dálá.	<i>This instant.</i>	Gu-le.	<i>Slowly.</i>
De-ring.	<i>To-day.</i>	Khá-rog-de.	<i>Silently.</i>

CONJUNCTIONS.

Dáng.	<i>And.</i>
Chyáng, Yáng.	<i>Also, although, notwithstanding.</i>
Yáng-ná.	<i>Or, else.</i>
Uente.	<i>If.</i>

Interrogative signs, expressive of doubt, may be formed of any word, by reduplicating its final letter and adding *m* to it ; as in, Ngáám Kho, *whether I or he*.

The PREPOSITIONS of occidental languages, are rendered in Bhotia

by post-positive particles. They generally follow the noun in the genitive case.

Ngi chir-du, *for me.*

Kháng-pi náng-du, *into the house.*

Sái hogtu, *under the earth.*

Ri-i gyib-ná, *behind the hill.*

SENTENCES.

The following sentences are given as specimens of composition, with the hope that they will afford some insight into the grammatical structure of the language, while they exemplify the rules and explanations above given.

Khyod thóm lá sǒng. *Go to the market.*

Yángchar nget tshói ehír de khyer shóg.

Bring me some rice.

Ngá tǒgpá chhe war yodh. *I am very hungry.*

Dhetái ngochitá yodh? *What is the price of that?*

Chitá zhi khyod lǒng wá yín? *How much do you want?*

Dóm kháchhe. *Open the trunk.*

Ngye tágzpá khye lá jyú chi yodh. *I will see what you have.*

Chí láchhlá yodh? *What do you say?*

Chí nye ki cháru tshó. *Come along with me.*

Chui phárol dhúdo. *Go across the river.*

Dewar ngá lá máthóbh. *I have not got it yet.*

Nám Khyodh leb yong tshe, dene ngá doweí dǎng. *When you come back then I shall go.*

Zháre zháre tshóg. *Come daily.* Ngá kyede má thong. *I have not seen him.*

Chichir khyod ngye tsár yong? *Why have you come to me?*

Ngá jhitsám khyód thóí nyámdú ne? *How long shall I stay with you?*

Zhág sǔm ngye dǎng nyám zu shu. *Remain three days with me.*

THE CHÁNGLO.

The dialect of the Bhotia, distinguished by the above name, is generally spoken along that portion of the northern frontier of the valley, extending from the Binjee Duwár to the confines of the Kuriápára Duwár, or from about the 91° to the 92° of East Longitude. How far north its colloquial use may be extended we have not the means of

accurately ascertaining; nor are we capable of forming a correct estimate of the probable number of the people by whom it is used.

The inhabitants of this tract of country, occupying as they do the lesser elevations of the Cis-Himalayan range, are generally speaking, agricultural. Their physical appearance exhibits a few shades of distinction noticeable between them and the tribes of the Sub-Himalayas. They are smaller, less muscular, and the hue of their skin possesses a deeper isabelline tint, from which latter circumstance probably they derive their appellation, the term Chánglo, signifying *black*.

The alphabetic symbols used by the Chánglos are identically the same as those used by the Bhotias. There is also a very close similarity in the idiom and genius of the two languages.

OF NOUNS.

Nouns have two *numbers*. There is no distinct termination expressive of the Plural: this number is generally formed by the addition of the adjectives *nám*, and *thámche*, signifying *all*, to which the signs of the cases are added in declension as in the singular number.

Cases are formed by the following particles used as affixes.

Nominative.	} —————	
Accusative.		
Genitive,		i, or yi, or gá.
Dative,		gá.
Ablative,		gái.
Instrumental,		gyi.
Locative,		náng.

According to the above scheme, the noun *Phái*, *a house*, may be thus declined:—

<i>Singular.</i>	<i>Plural.</i>
Nom. <i>Phái</i> , <i>a house</i> .	Nom. <i>Phái thamche</i> , <i>houses</i> .
Gen. <i>Pháiyi</i> , <i>of a house</i> .	Gen. <i>Phái thamche yi</i> , <i>of houses</i> .
Dat. <i>Pháigá</i> , <i>to a house</i> .	Dat. <i>Phái thamche gá</i> , <i>to houses</i> .
Abl. <i>Phái-gái</i> , <i>from a house</i> .	Abl. <i>Phái thamche gái</i> , <i>from houses</i> .
Acc. <i>Phái</i> , <i>house</i> .	Acc. <i>Phái thamche</i> , <i>houses</i> .
Instr. <i>Phái-gyi</i> , <i>with or by a house</i> .	Instr. <i>Phái thamche gzi</i> , <i>with or by houses</i> .
Loc. <i>Phái náng</i> , <i>in a house</i> .	Loc. <i>Phái thamche náng</i> , <i>in houses</i> .

The genitive sign is almost wholly excluded in common conversation.

This case is expressed merely by the juxta-position of the two substantives; the former, according to general usage in most Indian languages, being understood to form the genitive case; as in Songo pháí, *a man's house*. Kurtá bi, *the horse's leg*.

To mark the distinction of *Gender* the terms phó and mó are generally affixed to the substantives. Thus:

Sáyung, *a deer*. Masc. Sáyungphó, Fem. Sáyungmó.

Láng-che, *an elephant*, Masc. Láng-che-phó, Fem. Láng-che-mó.

Kurtá, *a horse*, Masc. Kurtá-phó, Fem. Kurtá-mó.

To distinguish the male and female of certain animals, the terms lágó or thóngphó, *male*, and dámó, *female*, are sometimes used; as in Khú, *a dog*, Masc. Khú-lágó, Fem. Khú-dámó. Rábá, *a goat*, Masc. Rábá-thóng-phó, Fem. Rábá-dámó.

When it is necessary to mark the distinction of gender emphatically, the adjectives Nyi-án-phó and Nyi-ánp-mó are usually placed after the generic noun.

OF ADJECTIVES.

The principle of placing the adjunct after the object to which it is attached causes the adjective generally to follow the substantive; as in Khá-móng bá-lungbó, *white cloth*. Ábá cháng-ló, *a black crow*.

Words originally expressing ideas in their nature substantives, are often used to express the quality they originally denote as existing in another substantive by the addition of the genitive sign. Shing, *wood*: Shiug-gá langle, *a wooden plough*.

The general mode of forming *comparison* is that of describing a person or thing as possessing some quality *more than* or *beyond* others. This method requires that the substantive with which the comparison is made be put in the ablative case. *Examples*:—

Ri-gái chángpó, *colder than water*.

Mi-gái sópó, *hotter than fire*.

Jáng-gái iyet pó, *greater than I*.

Changing the noun for the word Thámche, *all*, we have the form of the superlative degree.

Thámche-gái iyetpó, *greater than all*.

Another mode of forming this degree of comparison is by such expressions as *great of the great*, the first word being put in the form of the genitive case. Ex: Iyet-po-gá iyetpo.

Ring-bu-gá ringbu, *long of the long, or the longest*.

NUMERALS.

The system on which the Chánglo numerals is founded will be best exemplified by the following list :—

- | | |
|--------------------------------------|---|
| 1. Thúr. | 31. Khái-thur dáng song-thur, |
| 2. Nyik-ching. | &c. |
| 3. Sám. | 40. Kháinyik-ching, (<i>two-score.</i>) |
| 4. Phi. | 41. Khái nyik-ching dáng Thur, |
| 5. Ngá. | &c. |
| 6. Khung. | 50. Khái nyik-ching dáng se. |
| 7. Zum. | 51. Khái nyik-ching dáng song |
| 8. Yen. | thur, &c. |
| 9. Gú. | 60. Khái sám (<i>three-score.</i>) |
| 10. Se, which in composition | 80. Khái phi, (<i>four-score.</i>) |
| becomes Song. | 100. Khengá. |
| 11. Song-thur. | 200. Khái-se (<i>ten-score.</i>) |
| 12. Song-nyik-ching. | 300. Khái-songá. |
| 13. Song-sám, &c. | 400. Nisu-thur. |
| 20. Khái-thur (<i>one-score.</i>) | 500. Nisthur dáng khengá. |
| 21. Khái-thur dáng-thur, <i>one-</i> | 600. Nisthur dáng kháisc. |
| <i>score and one.</i> | 700. Nisthur dáng khái songá. |
| 22. Khái-thur dang nyik-ching. | 800. Nisi nik ting. |
| 23. Khái-thur dáng sám, &c. | 900. Nisi nik ting dáng khengá. |
| 30. Khái-thur dáng se. | 1000. Nisi nik ting dáng kháisc. |

OF PRONOUNS.

The PERSONAL PRONOUNS are Jáng, *I*. Nán, *Thou*, and Dán, *He*.

In declension they admit of the same terminations as the nouns.

Singular.

- Nom. Jáng, *I*.
 Gen. Jánggá, *mine*.
 Dat. Jánggá, *to me*.
 Abl. Jáng gáí, *from me*.
 Acc. Jáng or Jänge, *me*.
 Instr. Jáng gyí, *with or by me*.

Loc. Jáng náng, *in me*.

Plural.

- Nom. Jáng thámche, *We*.
 Gen. Jáng thámche gá, *ours*.
 Dat. Jáng thámche gá, *to us*.
 Abl. Jáng thámche gáí, *from us*.
 Acc. Jáng thámche, *us*.
 Instr. Jáng thámche gyí, *with or by*
us.

Loc. Jáng thamche náng, *in us*.

The plurals of the second and third persons are Nán thámche, and Dán thámche.

The DEMONSTRATIVE PRONOUNS are Thá, *this*; Nyá, *that*; and Lelá, used to denote an object *more remote*.

The INTERROGATIVE PRONOUNS, are Ebuyá, *who*? Obáehó, *which*? and Háng, *what*?

OF VERBS.

Chánglo verbs admit of no inflections indicative of person or number. The following paradigm will serve to show the forms a verb assumes in its different tenses:—

De, the root of the verb to go.

INDICATIVE MOOD.

<i>Present Indefinite.</i>	Jáng Dele, <i>I go.</i> Nán dele, <i>thou goest, &c.</i>
<i>Present Definite,</i>	Jáng Denchá, <i>I am going</i>
<i>Imperfect,</i>	Jáng Denchobá, <i>I was going.</i>
<i>Perfect,</i>	Jáng Debá, <i>I went.</i>
<i>Future,</i>	Jáng Dedong <i>I will go.</i>

IMPERATIVE MOOD.

This mood exists only in the second person, and the simple verb is used to express it, as Nán De, *go thou*.

The POTENTIAL MOOD is formed by the addition of the word róbe, or any other term significant of power, ability, &c. Jáng Dele ró-be, *I can go*.

PARTICIPLES.

Dele, *going*.
Dewe, *having gone*.

GERUNDS.

Dewá, *to go*.
Dene-nádu, or Delenang ká, *for the purpose of going*.

Interrogation is expressed by the addition of the interrogative particle mó. Thus: Nán Dele mó? *Do you go?*

The negative particle má is usually placed before the verb when negation is implied. Thus: Má delá, *I go not*. It is also used in the prohibitive form, Má de, *Do not go*.

Some of the Adverbs in common use are—

Omá, <i>now</i> .	Chápten, <i>slowly</i> .
Singye, <i>afterwards</i> .	Iti? <i>when?</i>
Dójó, <i>quickly</i> .	Khinang, <i>to-day</i> .

Námnying, *to-morrow.*Betpe, *in the morning.*Ining, *yesterday.*Nye-ri, *in the evening.*

SENTENCES.

Thóngsá de, *Go to the market.*Jáng brángxhó khu pháí, *Bring me some rice.*Jángá bináng khunchá, *I am very hungry.*Khu góng háng yá? *What is the price of rice?*Nán-shi hámtur cháspe yá? *How much do you want?*Dóm phiekchó, *Open the trunk.*Náhá háng chákábá janggye gódong, *I will see what you have.*Ná shiye háng dák chá yá? *What are you saying?*Jánggá Kábni ódó, *Come along with me.*Ri lenggó lokko de, *Go across the river.*Jáng ómábu má nyóng bá, *I have not got it yet.*Nán omchá unye jáng bo dedong, *When you come again I shall go.*Ngámre ngámre ódó, *Come every day (daily.)*Jáng dánye máthong chá, *I have not seen him.*Nánjá reptá hángá upháí yá? *Why have you come to me?*Jáng ne kápni hámtur chole yá? *How long shall I remain with you?*Jáng kápni bináng sám chye, *Continue with me three days.*Nán omchá kornye óphá jinggye loyikpe, *When you return I shall converse with you.*

THE GA'RO.

The Gáros occupy that triangular extent of mountainous country between the left bank of the Brahmaputra and the Khassia Hills. From its apex to its base, this triangle lies between the 25° and the 26° of N. latitude, and the base itself extends from the 90° to the 91° of E. longitude.

The Gáros have no traditionary legends whatever that may serve to enlighten us on the subject of their origin. Their remote situation, and their physical appearance, together with their modes and customs, so diverse from those of the Bhotias, would at first militate against the supposition that they were in any way connected with the Cis-Himalayan tribes. This connection however is now made apparent from the strong affinity existing between the language of the Gáros and the several dialects spoken by those tribes. Though these present several modifications, they may nevertheless be traced to the same radi-

cals, so as to prove that an essential affinity existed in their primitive structure, thus affording historical evidence of such a nature as it is impossible for either accident or design to have falsified.

The Gáros make use of no written characters ; and if they at any prior period had adopted the alphabetic symbols of the Bhotias, it is highly probable that their subsequent removal from all contact with them, together with all the hardships to which an emigrating tribe must naturally be subjected, have obliterated all traces of it.

OF NOUNS.

Gáro nouns have two *numbers*. The Plural is formed by the addition of the word ráng, signifying *all*. To this form, in declension, the signs of the cases are affixed as in the singular number.

The following are the affixes used in the formation of *Cases* :—

Nominative,———.

Genitive, ní.

Dative, ná.

Ablative, níkhó.

Accusative, khó.

Instrumental, chí.

Locative, ó.

According to the above scheme, the noun Nók, *a house*, may be thus declined :—

Singular.

Nom. Nók, *a house*.

Gen. Nókni, *of a house*.

Dat. Nókna, *to a house*.

Abl. Nókni khó, *from a house*.

Acc. Nók khó, *house*.

Instr. Nók-chi, *with or by a house*.

Loc. Nókó, *in a house*.

Plural.

Nom. Nók-ráng, *houses*.

Gen. Nók-rángní, *of houses*.

Dat. Nók-rángná, *to houses*.

Abl. Nók-ráng-níkhó, *from houses*.

Acc. Nók-ráng-khó, *houses*.

Instr. Nók-ráng-chi, *with or by houses*.

Loc. Nók-rángó, *in houses*.

Gender. In this language, as in most others, the names of the most common male and female objects in nature, are applied absolutely and without any relation to one another.

Examples.

Masculine.

Mánde, *a man*.

Ádá, *elder brother*.

Nóúó, *younger brother*.

Áplá, *father*.

Feminine.

Mechik, *a woman*.

Ábí, *elder sister*.

Áno, *younger sister*.

Ámá, *mother*.

The adjectives Bíphá and Bímá, *male* and *female*, are commonly added to the nouns that stand for animals. Thus: Áchak, *a dog*. Masc.: Áchak bíphá. Fem.: Áchak bímá. Máchak, *a deer*. Masc.: Máchak bíphá. Fem.: Máchak bímá. Denbó, *a cat*. Masc.: Denbó bíphá. Fem.: Denbó bímá.

OF ADJECTIVES.

Adjectives always follow the nouns they serve to qualify. As Bithe manná, *a ripe fruit*, Mándé námá, *a good man*.

When a substantive is used adjectively to express a quality as existing in another noun, it is put in the genitive case. Thus: Mándení ják, *the human hand*, or literally *the hand of man*. Ambal, *wood*, Ambalni ketháli, *a wooden knife*.

Adjectives do not admit of comparison by any regular inflections; the comparative degree is expressed by the dative case of the noun, and the addition of a word signifying *than*, *beyond*, &c. Thus, Rówá, *long*. Iná báte rówá, *longer than this*. Delá, *great*. Ángná báte delá, *greater than I*. In the superlative degree the comparison is made with the word Ráng or Dáráng, *all*, and the word báte, *than*, is placed after the adjective. Thus, Dáráng-ná del báte, *greater than all*, (greatest,) Dáráng-ná (rówá-báte) robáte, *longer than all*, (longest.)

When an adjective is used in composition with a noun the signs of the cases are usually affixed to the adjective. Thus :

Nom.	Mándé námjá, <i>a bad man</i> .
Gen.	Mándé námjá-ni, <i>of a bad man</i> .
Dat.	Mándé námjá-ná, <i>to a bad man</i> , &c.

NUMERALS.

The numeral system of the Gáros is emphatically decimal, and extends only so far as to admit of the enumeration of the fingers and toes.

1. Shá.	11. Chi-shá.
2. Gini.	12. Chi-gini.
3. Githam.	13. Chi-githam.
4. Bri.	14. Chi-bri.
5. Bongá.	15. Chi-bongá.
6. Dok.	16. Chi-dok.
7. Sni.	17. Chi-sni.
8. Chet.	18. Chi-chet.
9. Shkú.	19. Chi-shkú.
10. Skang.	20. Chi-skang.

A peculiarity in the use of the above numerals is here worthy of notice.

When applied to *men*, the particle *Shák*, is always prefixed ; thus : *Mánde shák skang, ten men.* *Ángná nóno shák-bri dongá, I have five brothers.* And when the individuals of a group or company are reckoned up the computation proceeds thus : *Shák-shá, Shák-gini, Shák-githam, or Shák-tham, Shák-bri, &c.*

When the numerals are applied to individuals of the brute creation, they are preceded by the particle *Máng* ; thus : *Máchu máng-dok, six cows.* *Dóo máng-githam chkángahá, we carried off three fowls.*

When enumerating inanimate objects the particle *Ge* is always prefixed to the numerals, thus : *Ám ge-gini, two mats.* *Meng-go-ni jáá ge-bri, a cat has four legs.*

OF PRONOUNS.

The PERSONAL PRONOUNS are *Ángá, I* ; *Ná-á, Thou* ; and *Uá, he* ; with their plurals *Chingá, we* ; *Násimong, you* ; and *Uá-mádáng, they.* No distinction is made on account of gender. They are declined like nouns.

1st Person.

<i>Singular.</i>	<i>Plural.</i>
Nom. <i>Ángá, I.</i>	Nom. <i>Chingá, we.</i>
Gen. <i>Ángni, mine.</i>	Gen. <i>Chíngní, ours.</i>
Dat. <i>Ángná, to me.</i>	Dat. <i>Chíng-ná, to us.</i>
Abl. <i>Ángnikho, from me.</i>	Abl. <i>Chíng-níkho, from us.</i>
Acc. <i>Áng-kho, me.</i>	Acc. <i>Chíng-kho, us.</i>
Instr. <i>Áng-chi, by me.</i>	Instr. <i>Chíng-chí, by us.</i>
Loc. <i>Áng-o, in me.</i>	Loc. <i>Chíng-o, in us.</i>

2nd Person.

<i>Singular.</i>	<i>Plural.</i>
Nom. <i>Náá, thou.</i>	<i>Násimong, you.</i>
Gen. <i>Nángni, thine.</i>	<i>Nángsimongni yours.</i>
Dat. <i>Náng-ná, to thee.</i>	<i>Násimongná, to you.</i>
Abl. <i>Náng-níkho, from thee.</i>	<i>Násimongnikho, from you.</i>
Acc. <i>Náng-kho, thee.</i>	<i>Násimongkho, you.</i>
Instr. <i>Náng-chi, by thee.</i>	<i>Násimongchi, by you.</i>
Loc. <i>Náng-o, in thee.</i>	<i>Násimongo, in you.</i>

3rd Person.

<i>Singular.</i>	<i>Plural.</i>
Nom. Uá, <i>he.</i>	Uámádáng, <i>they.</i>
Gen. Uáni, <i>his.</i>	Uámádángui, <i>theirs.</i>
Dat. Uáná, or Uná, <i>to him.</i>	Uámádángná, <i>to them.</i>
Abl. Nánikho, <i>from him.</i>	Uámádángkho, <i>from them.</i>
Acc. Uá-kho, <i>him.</i>	Uámádáng-kho, <i>them.</i>
Instr. Uá-chi, <i>by him.</i>	Uámádang-chi, <i>by them.</i>
Loc. Uáo or Uáno, <i>in him.</i>	Uámádángo, <i>in them.</i>

The DEMONSTRATIVE PRONOUNS are, Iá, *this*, and O'á, *that* ; with their plurals Íaráng, *these*, and O'áráng, *those*.

The INTERROGATIVE PRONOUNS are Shá, *who* ? Bádiá, *which* ? and Máí, *what* ?

These are all declined like the Personal Pronouns.

OF VERBS.

The Substantive verb, *to be*, is, in Gáro, usually expressed by the reduplication of the final letter of a word. Thus : from námá, *good*, we have Námáá, *it is good*. Nok, *a house*, Nokká, *it is a house*. The verb Dong, *to be, to exist*, is often used with the same signification. Thus : Wál dongá, *it is fire*.

The verb To Go, may be thus conjugated :—

INDICATIVE MOOD.

<i>Present Indefinite.</i>	Iáng-ná, <i>I go, thou goest, he goes, &c.</i> [This is also the form of the Gerund, signifying <i>to go</i> , or <i>for the purpose of going</i> .]
<i>Present Definite.</i>	Iáng-engá, <i>I am going, &c.</i>
<i>Imperfect.</i>	Iáng-engá-chím, <i>I was going, &c.</i>
<i>Perfect.</i>	Iáng-áá or Jáng-á, <i>I went, &c.</i>
<i>Perfect Definite.</i>	Iángá-chím, <i>I have gone, &c.</i>
<i>Future proximate,</i>	Inesá, <i>I will go, &c.</i>
<i>Future remote,</i>	Iángkhing, <i>I will go, &c.</i> [This form also denotes termination.]

PARTICIPLES.

<i>Present,</i>	Iánge, <i>going.</i>
<i>Continuative,</i>	Iángo iángo, <i>going or continuing to go.</i>
<i>Past,</i>	Iáng imong, <i>having gone.</i>

IMPERATIVE MOOD.

The only instance in which this mood really exists is in the 2nd person, *Iáng-bó, go thou.*

The Potential mood includes a variety of ideas which may be expressed by words signifying ability, duty, &c.

Iágná mánná or Iágná mán khen ná, may or can go.

Iágná mankhe chim, might have gone.

SUBJUNCTIVE MOOD.

Iángóde, If I go.

The verb in the Passive Voice is conjugated in the same manner as the preceding, with the addition of the word *mán*, introduced between the verb and its inflection.

INDICATIVE.

Present Indefinite, Iáng-mán-na, I am gone.

Present Definite, Iáng-mán-engá, being gone.

Imperfect, Iáng-mán-engáchim, was being gone.

Perfect, Iáng-mán-áá, was gone.

Perfect Definite, Iángá-man-chim, have been gone.

Future proximate, I-mán csá, will be gone.

Future remote, Iáng-man-kheng, will be gone.

And so on through the other moods and tenses.

Negation is implied by the use of the word *já*, after the verb in its various tenses.

Ángá iáng, I do not go.

Uá thóle ágán-ja, he tells no lies.

The same word is added to adjectives to express a negative quality. Thus: *Námá, good; Námja, bad.*

The *prohibitory form* is expressed by prefixing the particle *dá*, to the verb with which it is used. Thus: *Dá iáng, go not.*

Khimi-náni dá shál, do not pull her tail.

The *interrogative* particle *má* is usually placed after the verb or at the end of a sentence in which a question is asked. *Náá uná khenná má? Are you afraid of him? Ná dáálo nokná inésá má? Will you go home to day?*

The general mode of arranging words into sentences is the same as that which prevails in the Bhotia; nouns precede their attributes and

the verb stands at the end of the sentence, having its qualifying adverb placed immediately before it. This mode, however, is not always attended to in the Gáro and its cognate dialects, in which we often find sentences follow no other order in their construction than what the taste or fancy of the composer may suggest: sometimes making the object, sometimes the action, and sometimes the modification of the action to precede or follow the other parts. The confusion which this might be supposed to occasion is avoided by the manner of inflecting their words, by which they are made to refer to the others with which they ought to be connected, in whatever part of the sentence they occur, the mind being left at liberty to connect the several parts with one another after the whole sentence is concluded.

ADVERBS.

Báshko, *when?*

Báshikcháng, *how many times?*

Báchi, *where?*

Iáno, *here.*

Uáno, *there.*

Áphálo or Áphálchi, *outside.*

Níng-chi, *inside.*

Dáóng, *now.*

Báshko-báshkobá, *sometimes.*

Shálántini, or Sháldráng, *always.*

Pák-pák, *quickly.*

Kásn-kásn, *slowly.*

Wálo-sálo, *day and night.*

Príngó, *in the morning.*

Áthámó, *in the evening.*

Máiná, *why.*

Námá, *well.*

Indin, *so.*

Tháljá, *truly.*

Báshik, *how many?*

Báshishák, *ditto*, applied to men.

Báshikmáng, *ditto*, applied to inferior animals.

Post-positive particles, in this language supply the place of the prepositions in occidental tongues. They generally follow the noun in the Genitive case, though the sign of the genitive is often omitted.

Makhá, *with*, Ángni makhá rebó, *Come with me.*

Nung, *in*, Uá nok nung dongá, *He is in the house.*

Koshák, *upon*, Ádung chángrowá koshák, *upon the high hill.*

Sipáng, *near*, Wál sipáng dá iáng, *Go not near the fire.*

Skáng, *before*, Ángni skáng-skáng iángbó, *Go before me.*

Jámáng, *after*, Uáui jámáng jámáng íbábo, *Come after him.*

SENTENCES.

Báoná inesá? *Where (are you going, or) will you go?*

Makhá wákheng, *It will rain.*

Áng makhá rebo, *Come with me.*

Mánde-bisá-ráng róá, *The boys play.*

Máchá mánde chká, *The tiger kills men.*

Náá uná khien jámá? *Are you not afraid of him?*

Menggó móshe chká, *The cat kills mice.*

Uáló nikhá, *She sees in the dark.*

Jákskhil máttá, *Her claws are sharp.*

Khimi dáshál, *do not pull her tail.*

Khimi shálode, khuákheng, *If you pull her tail, she will scratch you.*

Náthok námákho nibo, *Look at this fine fish.*

Ángá uá nathokho balsisi mánná, *I caught this fish with a hook.*

Chi dongjáde, shi kheng, *If it have not water, it will die.*

Khimi dókshá tengá, *It shakes its tail.*

Uá shi khu já, *It is not dead.*

Mánde chio thángjá, *Men do not live in the water.*

Matte mángshá sháán, *There is but one God.*

Uá thánga mámung óbá shijá, *He lives for ever.*

Áá shilgi dákká, *He made the earth and the heavens.*

Áng kho, náng kho, dáráng kho gámmá, *He made me and you and all things.*

Ból githing, áchu dállá, chi bimá, shál, já, doshák düpil jáshkhi, iárángkhobá mätte dákká, *The green tree, the high mountain, the great water, the sun, the moon, the twinkling stars, God made all these.*

Mánde sáksáni degapá sakni. Dephán-te songópá uni phágápá kho

One man (had) two sons. The younger son to his father

ágána. E Áphá! ángná gám mattám ónbó. Unphágápá
said, O Father! to me a share of the wealth give. His father

gámkhó shuále onnáá. Uni já mánó dephán-te
the wealth dividing gave (it to him.) A few days after the

songópá átháng gámkhó áimang sangche láchi iángá ;
younger son his own wealth taking to a far country went ;

wó sangó átháng nám jáimang átháng gámkhó gomáitá.
in that country he in doing wickedly his wealth spent.

Nkhemo uni gám gammá thó kete uá sangó ákál ongáá,
Afterwards his wealth having spent in that country a dearth was,

uá bán bara dukh ongáá. Unkhoá unisangóni mánđe sháksá
his great distress was. Then of that country one man

chánádongá ungkhémang uni nók shephángona iángá. Uá mánđe
being rich there to his house he went. That man

uákhó wák nerikná anná, wákná cháná ónako uá
him pigs to keep gave, to the pigs the food (that was) given he

cháná dakká, uná dárángbá cháná ónjá. Nkhémung átháng
wished to eat, to him no one gave to eat. After shut his own

gishkho ráimang ágáná, hái ! hái ! áng phágopáni nokó
mind being distressed he said, alas ! in my father's house

sákar mánđe mánná dongá, unóde ángábá cháná mankhechim.
servants are many, there I also to eat might have.

Ángá ioni iángxheng ápháni nokoná.

I hence will go to my father's house.

THE KÁCHÁRI.

The Kácháris, or (as they term themselves) Bórrós, are a numerous race, found in almost all parts of the valley of Asam, but principally along its northern and southern boundaries. Chatgari, a frontier district, situated between Desh Durrung and the Bhotan hills, seems to be their principal *local* ; and here their numbers are said to amount to about 30,000, which is about half the Káchári population in the valley.

Destitute of any written characters, they have no historical records of any kind from which to deduce proofs of their origin ; and their traditionary legends throw but a faint light on the subject. An examination into their language however furnishes abundant proof of their intimate connection with the tribes of the Cis-Himalayas. A large proportion of their vocables are identical with those of the Gáros, and almost all the rest may be traced to some dialect of the Thibetan, while the idiom

of the language and the peculiarities of its grammar show abundant traces of descent from a common origin.

Closely connected with the Kácháris, among the inhabitants of the plains, are the Hojái Kácháris, the Kochis, (including the Modai Kochis, the Phulguriyas, and Hermias,) the Mechis, the Dhimals, and the Rabhas.

It is not our purpose at present to say anything of these dialects, between which and the Káchári the differences are rather nominal than real, but our remarks will have reference only to the peculiarities of the Káchári language.

OF NOUNS.

Nouns have two *numbers*. The plural is generally formed by the addition of the word phúr, to which, in declension, the signs of the cases are added as in the singular number.

Cases are formed by the use of the following post-positive particles, which except in the Dative case are added to nouns in the genitive form.

Nominative,	_____.
Genitive,	ni.
Dative,	no, há.
Ablative,	phrái.
Accusative,	khó.
Instrumental,	jang.
Locative,	áo-há.

In accordance with the above scheme, the noun Mánse, *a man*, may be thus declined :

Singular.

Nom.	Mánse, <i>a man</i> .
Gen.	Mánseni, <i>of a man</i> .
Dat.	Mánsenó, <i>to a man</i> .
Abl.	Mánseni phrái, <i>from a man</i> .
Acc.	Mánse khó, or Mánseni khó, <i>man</i> .
Instr.	Mánsenijang, <i>by a man</i> .
Loc.	Mánseni áo, or Mánsenihá, <i>in a man</i> .

Plural.

Nom.	Mánse-phur, <i>men</i> .
Gen.	Mánse-phurni, <i>of men</i> .
Dat.	Mánse-phur nó, <i>to men</i> .
Abl.	Mánse-phur ni phrái, <i>from men</i> .
Acc.	Mánse-phur khó, <i>men</i> .
Instr.	Mánse-phur ni jang, <i>by men</i> .
Loc.	Mánse-phurni áo, <i>in men</i> .

Gender. The most common nouns have distinct terms to denote the distinction of sex. Thus :

*Masculine.**Feminine.*

Mánse, <i>man.</i>	Hinjáo, <i>woman.</i>
Bisái, <i>husband.</i>	Bihí, <i>wife.</i>
Aphá, <i>father.</i>	Ái, <i>mother.</i>
Biphá, <i>father.</i>	Bimá, <i>mother.</i>
Ádá, <i>elder brother.</i>	Bái, <i>elder sister.</i>
Phong báí, <i>younger brother.</i>	Binánáo, <i>younger sister.</i>
Mánse góthó, <i>man-child (boy.)</i>	Hinjáo góthó, <i>woman-child (girl.)</i>

The words, Jeu, and Jelá, which are equivalent to the terms *male* and *female*, are commonly added to the nouns that stand for animals. There are exceptions however to this rule, the terms Bóndá and Bóndi, Phántá and Phánti, Pherá and Pheri, are in certain cases substituted for the usual sexual postfixes.

*Masculine.**Feminine.*

<i>A Dog</i> , Cheimá-jelá.	Cheimá-jeu.
<i>A Tiger</i> , Mosá-jelá.	Mosá-jeu.
<i>A Cat</i> , Máuji-bóndá.	Máuji-bóndi.
<i>A Deer</i> , Khutiámoi-phántá.	Khutiámoi-phánti.
<i>A Goat</i> , Búrmá-phántá.	Búrmá-phánti.
<i>A Buffalo</i> , Moichü-pherá.	Moichü-pheri.

OF ADJECTIVES.

In Káchári, the qualifying adjuncts are placed as often before as after the substantives ; thus : Mánse gáhám, *a good man.* Hámmá góthó, *a naughty boy.* Hinjáósá laji ganang, *a modest maid.* Hángsi guphut, *a white goose.*

Adjectives expressing an abstract quality are formed by the addition of the word Ganang, *having, possessing.* Thus : Khnái, *hair* ; Khnái ganang, *hairy.*

Rang, *colour* ; Rang ganang, *coloured.*

Hágrá, *a forest* ; Hágrá ganang, *woody.*

Negative adjectives are formed by the addition of Geyá, *empty.* Thus :

Rang, *colour* ; Rang-geyá, *colourless.*

Bide, *juice* ; Bide-geyá, *juiceless.*

Tháká, *wealth, money* ; Tháká-geyá, *poor, penniless.*

Hí, *cloth* ; Hí-geyá, *naked.*

Comparison.—Adjectives admit of no inflections expressive of the degrees of comparison. A person or thing is therefore described as possessing some quality beyond another, or more than all; and for this purpose the word Chin, *than*, is added to the adjective, and the substantive with which the comparison is made is put in the genitive case. Instead of the sign of the genitive case, the euphonic particle Bó is sometimes used. Thus, Gedet, *great*. Bini gedet chin, or Binbó gedet chin, *greater than this*.

Bóinó, *all*. Bóini gedet chin, or Bóinóbó gedet chin, *greater than all*.

Grá, *hard*. Bini grá chin, *harder than this*. Sarni grá chin, *harder than iron*. Bóini, or Bóinóbo grá chin, *hardest of all*.

NUMERALS.

The following is the cardinal series of numbers extending only to 10. When it is necessary to reckon beyond this number, the Kácháris adopt the numeral system of the Bengalis.

1. Che.	6. Ró.
2. Náí, or Gni.	7. Sni.
3. Thám.	8. Ját.
4. Brc.	9. Chku.
5. Bá.	10. Jí.

When applied to *human beings*, the particle Sá, is prefixed to the numerals, when applied to *other animals*, Má; to *inanimate objects*, Thái; to trees, &c. Pháng: to *articles enumerated by pieces*, Gáng. With the addition of these prefixes, the numeral may either precede or follow the noun. Ex. Mánse sánái, *two men*. Burmá mábre, *four goats*. Phitái tháiró, *six fruits*, &c.

OF PRONOUNS.

The *Personal pronouns* are Áng, *I*; Nang, *thou*; and Bi, *he*; with their plurals Jang, or Jang-phur, *we*; Nangsur, *ye*; and Bisur, *they*. No distinction is made on account of gender. They are declined like the nouns.

1st Person.

<i>Singular.</i>		<i>Plural.</i>	
Nom.	Áng, <i>I</i> .	Nom.	Jang, or Jangphur, <i>we</i> .
Gen.	Ángui, <i>mine</i> .	Gen.	Jangni, <i>ours</i> .
Dat.	Ángnó, or Ángnihá, <i>to me</i> .	Dat.	Jangnó, <i>to us</i> .
Abl.	Ángniphraí, <i>from me</i> .	Abl.	Jangniphraí, <i>from us</i> .
Acc.	Ángkhó, <i>me</i> .	Acc.	Jangkhó, <i>us</i> .

Inst. Ang jang, *by me.*Loc. Angniáo, *in me.*Inst. Jang jang, *by us.*Loc. Jangniáo, *in us.*

2nd Person.

*Singular.*Nom. Nang, *thou.*Gen. Nangni, *thine.*Dat. Nangnó, *to thee.*Abl. Nangniphraí, *from thee.*Acc. Nang khó, *thee.*Inst. Nang jang, *by thee.*Loc. Nangniáo, *in thee.**Plural.*Nom. Nangsur, *ye.*Gen. Nangsurni, *yours.*Dat. Nangsurnó, *to you.*Abl. Nangsurniphraí, *from you.*Acc. Nangsur khó, *you.*Inst. Nangsurnijang, *by you.*Loc. Nangsur niáo, *in you.*

3rd Person.

*Singular.*Nom. Bi, *he, she, it.*Gen. Bini, *his.*Dat. Binó, *to him.*Abl. Biniphraí, *from him.*Acc. Bikhó, or Binikhó, *him.*Inst. Binijang, *by him.*Loc. Biniáo, *in him.**Plural.*Nom. Bisur, *they.*Gen. Bisurni, *theirs.*Dat. Bisurnó, *to them.*Abl. Bisurniphraí, *from them.*Acc. Bisurkhó, or Bisurnikhó,
*them.*Inst. Bisurnijang, *by them.*Loc. Bisurniáo, *in them.*

The DEMONSTRATIVE PRONOUNS are Beye, *this*; and Bóyu, *that*; with these plurals, Beyphur, *these*; and Bóyphur, *those*.

The INTERROGATIVE PRONOUNS, are Shur, *who*? Bóbe, *which*? and Má, *what*?

They are all declined like the personal pronouns.

OF VERBS.

The Substantive verb, *To be*, appears to be wholly wanting in Ká-chári; its place is often supplied by the verb Dang, *exist*. Thus: Dũi dang, *it is water*.

All verbs may be conjugated after the form of the following paradigm.

INDICATIVE MOOD.

Present. Já-dang, *am eating*. Tháng-dang, *am going*. Máu-dang, *am doing*.

Here the verb Dang, *exist*, is added to the root of the verb as an auxiliary.

Imperfect. Já-bái, or Já-nái, *ate.* Tháng-bái, or Tháng-nái, *went.*
Máu-bái, or Máu-nái, *did.*

Perfect. Já-dangman, *have eaten.* Tháng-dangman, *have gone.*
Máu-dangman, *have done.*

Future, (proximate.) Já-nise, *will eat.* Tháng-nise, *will go.* Máu-nise, *will do.*

Future, (remote.) Já-gan, *will eat.* Tháng-gan, *will go.* Máu-gan, *will do.*

PARTICIPLES.

Present. Já-dang, *eating.* Tháng-dang, *going.* Máu-dang, *doing.*

Past. Jánáne, *having eaten.* Tháng-náne, *having gone.* Máu-náne, *having done.*

Gerund. Jáná, *to eat, for the purpose of eating.*
Tháng-ná, *to go, for the purpose of going.*
Máu-ná, *to do, for the purpose of doing.*

The verb *Láng*, *take away*, is sometimes compounded with another verb, to convey the idea of an action having been done completely, or effectually. Thus. Áng máu-láng-bái, *I have done (it) effectually.* Nang já-láng-bái, *thou hast eaten (it) completely.* Bì tháng-láng-bái, *he has gone away effectually.*

IMPERATIVE MOOD.

The only instance in which this mood really exists is in the 2nd person. Here the root of the verb is used. As; Nang já, *eat thou.* Nang tháng, *go thou.* The English form, *let me eat*, &c. is expressed by the addition of the verb *Hó*, *give*, or *Than*, *permit*. Thus; Ángno jáná hó, *let me eat.* Ángkho thánghá than, *let me go.*

The Subjunctive Mood, is formed as in English, by prefixing the subjunctive particle *if*, *Jadi*. Thus; Áng jadi jádang, *If, I eat.* *Jadi nang thánggan, If thou wilt go.*

POTENTIAL MOOD.

Power or capacity is usually expressed by *Háá*, *to be able*, added to the gerund.

Áng thánghá-háágan, *I will be able to go, or I can go.*

Bì mauná-háábái, *He was able to do.* And so through all the other tenses.

The use of the word *Gaman* as an auxiliary, appears to give us a form of a Preterpluperfect tense in this mood? Thus, Áng já-gaman,

I might, could or would have eaten. Nang tháng-gaman, *Thou mightest have gone.*

Duty or obligation, is expressed by the word Náng-gan. Thus : Nang thánagná-náng-gan, *You must go.*

The Optative Mood, or the form expressive of *desire*, is denoted by the word Námái used as an auxiliary after the gerund. Thus, Áng thánagná-námái, *I wish to go.* Bi jáná-námáidang, *He is desiring to eat.*

The Prohibitive form is expressed by Dá, used as a prefix to the verb in the Imperative Mood. Dá tháng, *Go not.* Dá já, *Eat not.* Dá máu, *Do not.*

Simple Negation is expressed by the particle A (changed into Yá after a vowel). Thus. Áng thányá, *I do not go.* Bi já-yá, *he does not eat.*

When a question is asked, the interrogative particle Ná is usually added to the verb. Thus : Nang thánagna-háágan ná? *Wilt thou be able to go?* This particle is omitted when any other word in the sentence implies an interrogation. Thus : Bi má bidang, *What does he want?* Nang má ráidang, *What art thou saying?*

The Passive voice is usually formed by means of an auxiliary verb, signifying, *to be, to eat, to exist, &c.* added to the root of the primary verb. Thus from Bu, *strike*, and Já, *eat*, we have—

Present tense. Áng bu já dang, *I am struck.*

Imperfect. Áng bu jábái, *I was struck.*

Perfect. Áng bu já dangman, *I have been struck, or I have eaten a beating ; and so on through all the other tenses.*

The general mode of arranging words into sentences is the same as that, that obtains in the Bhotia and Garo, and is common to all trans-positive languages.

A few of the Adverbs and other indeclinable particles in common use, are here subjoined.

Jitiá, *when.*

O'bólá, *then.*

Unáó, *afterwards.*

MDáne, *now.*

O bólá, *when?*

Fhungáo, *in the morning.*

Monáíáo, *in the evening.*

Gában, *to-morrow.*

Miyá, *yesterday.*

Dini, *to-day.*

Máóáh, *where?*

Behá, *here.*

Boihá, *there.*

Gejáná, *afar off.*

Mána, *why?*

Máb্রে, *how?*

Tháip-chyá, *how many?*

Besebáng, *how much?*

Jesebáng, *as much.*

U'sibáng, *so much.*

Erehái, *so, like this.*

Hórehái, *like that.*

Góbáng, *much.*

Thísi, Bángái, *little.*

Thubái, *enough.*

Kintu, *but.*

Áró, *and, also.*

Láse-láse, *slowly.*

Már-már, *quickly.*

U, Nóngó, *yes.*

Geyá, Nóngá, *no.*

SENTENCES.

Nangni náwá má?

What is your name?

Ángui náwá Pislá.

My name is Pislá.

Nang bajará thangnánanggan.

You must go to the Bazar.

Dini sánsemán má máu dangman?

What have you done all day long?

Nang jidi mithigo má ni ktá?

If you know why do you not speak?

Áng mungbó ktá ke.

I did not say any thing.

Nó luna uwá námái.

Look for bamboos to build a house.

Hánse jen duá jen gobone dang.

Keep the ducks and fowls apart.

Ángni se-gáng-gáu gósóng náne dáthá.

Do not stand before me.

Wotni jeng ángni jeng dá gósóng.

Do not stand between me and the fire.

Ángni ádá khó lingdangman pháíá kshe.

I have called my brother but he would not come.

Bi ktadang gában pháíná námáidang.

He says he wishes to come to-morrow.

Gában phungáo pháí.

Come early to-morrow morning.

Thágná nábái dang thái, tháng.

If you wish to go now, go.

Ang má ktágan bikhuno gunidang.

I am thinking of what I am to say.

Sáche mánsehá psárlá sánái dangman. Psárla godái sthángni
To a certain man two sons there were. The younger son to his
 bipháhá ktábái, Hele Áphá! Thákná chijchárá jidaŋge ángbhágche
father said, O father! the goods that will fall

mangan ángni hó, Sthángni bóstu bisurni ránnánnái hóbái.
to my lot give to me. His own goods to them having divided he gave.

Sánnaisur thangnánnái, psárlá godái dhón-bóstu lángnánnái,
A few days having passed, the younger son his substance having taken,
 gejánhá dekháo thágbái. Sthángni thákhá erine sephái thórobái. Boibó
to a far country went. His wealth uselessly he spent. All

sephái thóronánnái bi dekháo. Ángkál jábái, Abóla
having squandered in that country a famine was (or ate up). Then

jánemane hámlágbái. Unáo bi thágnánnái bi
not having to eat he dried up (starving). Then he having gone in that

dekháo giri nose náó thábái. Bi mánse omá gúmná
country in a householder's house remained. The man swine to feed

dubliáo thúnótbái. Obóla ómá jána gunde jang sthángni
in the field sent (him). Then for pigs to eat the husks with his own

ude bunghuná issá já bái, kintu bine ráóbó hoákse. Unáo
belly to fill he was desirous, but no one gave (him). Then

mónáo gugleinána, bi ktábái, Ángni ápháá bándi gólám jábráŋge-
in mind being pained, he said, My father's servants are

dang jána lángna máne dang, bini khiribo jábráŋgedang,
many, to eat enough (they) have, more than that they all have,

Ángá ikhámukhinána tháidang, áng biniphrái ápháhá

I for want of food am dying, I hence to (my) father

tháŋg-gan.

will go.

N. B. These notes had been written before I had had an opportuni-

ty of seeing Mr. Hodgson's "First Essay on the Aborigines of India." On a comparison of his remarks on the grammar of the "Bodo" (Kachari) language with those here submitted, a few discrepancies will be observable, particularly in the conjugation of verbs.

After a careful re-examination of my notes, however, I have seen no reason for introducing any amendments. The want of agreement between us may probably be attributable to local peculiarities.

THE MIRI.

The chief seat of the Miris appears to be the low hills north of Banskotta and Lukimpur, from whence the exactions and cruel ravages of their formidable neighbours the Abors, have compelled them to emigrate in large numbers, into the plains of Upper Asam.

The Abors, and Bor-Abors occupy an extensive range of mountainous country, along the southern exposure of the great Himalaya chain extending from the 94° to the 97° of east longitude and bordering, it is said, on Thibet and China.

A partial comparison of the dialects spoken by these tribes furnishes abundant evidence of their original consanguinity; while the coincidence between their vocables and the terms in common use by the Thibetan tribes is frequent and unequivocal.

The Miri, being the only one of these dialects we have had an opportunity of examining, our remarks relating to grammar, will have reference to that dialect only.

OF NOUNS.

The *Cases* of nouns, of which there are six, are expressed by the addition of post-positive particles, except in the instance of the accusative, and sometimes of the Genitive case. The noun which stands in this latter relation is often indicated merely by its being placed before the other.

The absence of a *plural* form is usually supplied by the introduction of the words *áráng* and *kiding*, signifying *all*, to which in declension the particles are applied as in the singular number.

The following is an example of the declension of a noun.

Elág, a hand.

Singular.

Nom.	<i>Elág, a hand.</i>
Gen.	<i>Elág, or Elágga, of a hand.</i>
Dat.	<i>Elág-nape, or Elág-kepe, to a hand.</i>

Acc.	Elág, <i>hand</i> .
Abl.	Elág-lókem, or Elág-kem, <i>from a hand</i> .
Instr.	Elág-kóki, <i>with a hand</i> .
Loc.	Elág-ló, <i>in a hand</i> .

Gender is sometimes denoted by distinct words, as :

Ámie, <i>man</i> .	Mimmó, <i>woman</i> .
Kóúa, <i>boy</i> .	Mieng, <i>girl</i> .
Bábá, <i>father</i> .	Náná, <i>mother</i> .
Páíá, <i>uncle</i> .	Niáyá, <i>aunt</i> .
Milló, <i>husband</i> .	Mieng, <i>wife</i> .

The male and female of inferior animals are indicated by the terms baka and keka, these terms, however, are added only to the last syllable of the nouns, thus :

Dum-sung, *a deer*. Masc. Sung-baka. Fem. Sung-neka. Menjeg, *a buffalo*. Masc. Jeg-baka. Fem. Jeg-neka. Sit-te, *an elephant*. Masc. Te-baka. Fem. Te-neka. Saben, *a goat*. Masc. Ben-baka. Fem. Ben-neka. Eki, *a dog*. Masc. Ki-baka. Fem. Ki-neka.

In asking a question to ascertain the gender of these animals, a still further abbreviation is employed. The last syllable of the noun, and the first of the adjective are the only ones used. Thus :

Tene teba? *Is it a male or a female elephant?*

Kine kiba? *Is it a male or a female dog?*

Benne ben ba? *Is it a male or a female goat?*

OF ADJECTIVES.

The position of an adjective in a sentence is immediately after the noun it serves to qualify, as : Rók-pi áimá, *a bad egg*. Ámie áidá, *a good man*.

An adjective has no variation of case or number ; but when used in composition with a noun, the variations of case are usually applied to the adjective instead of to the substantive.

Adjectives are compared by adding Ámedág, or Titidág, *very, exceeding*, for the comparative, and Átádág, for the superlative. Thus :— Átág, *broad*. Átág ámedág, *broad*. Átág átádág, *broadest*.

Kámpó, *beautiful*. Kámpó titidág, *more beautiful*, and Kámpó átádág, *most beautiful*.

To give greater force or expression to the comparison the words Ámedág and átádág are sounded with a lengthened utterance of the voice.

The most expressive superlative form is made by prefixing the word *ápuling*, *all*, to the ordinary superlative. *Ápuling kámpó átádág*, *the most beautiful of all*.

NUMERALS.

The Miri numerals, which apparently were meant only to suffice for the enumeration of the fingers and toes, are as follows:—

- | | |
|-----------------------|--|
| 1. <i>Ákó.</i> | 11. <i>U-ying-kó-á-kó.</i> |
| 2. <i>Án-i-kó.</i> | 12. <i>U-ying-kó-án-i-kó.</i> |
| 3. <i>Áum-kó.</i> | 13. <i>U-ying-kó-áum-kó.</i> |
| 4. <i>Á-pi-kó.</i> | 14. <i>U-ying-kó-ápi-kó.</i> |
| 5. <i>Ang-ó-kó.</i> | 15. <i>U-ying-kó-ang-ó-kó.</i> |
| 6. <i>Á-keng-kó.</i> | 16. <i>U-ying-kó-á-king-kó.</i> |
| 7. <i>Ki-nit-kó.</i> | 17. <i>U-ying-kó-kinit-kó.</i> |
| 8. <i>Pí-ni-kó.</i> | 18. <i>U-ying-kó-pí-ni-kó.</i> |
| 9. <i>Kó-náng-kó.</i> | 19. <i>U-ying-kó-náng-kó.</i> |
| 10. <i>U-ying-kó.</i> | 20. <i>U-ying-án-i-kó, or I-ling-kó.</i> |

OF PRONOUNS.

The *Personal Pronouns* are *Ngó*, *I*, *Nó*, *thou*, and *Bü*, *he*, with their plurals, *Ngólu*, *Nólu*, and *Bülu*. No distinction is made on account of gender.

They admit of the same variations of case as the nouns.

1st Person.

	<i>Singular.</i>	<i>Plural.</i>
Nom.	<i>Ngó</i> , <i>I</i> .	<i>Ngólu</i> , or <i>Ngó-lu-ke</i> , <i>We</i> .
Gen.	<i>Ngóg</i> , <i>mine</i> .	<i>Ngólug</i> , <i>ours</i> .
Dat.	<i>Ngóg-kepe</i> , <i>to me</i> .	<i>Ngó-lug-kepe</i> , <i>to us</i> .
Abl.	<i>Ngóg-lókem</i> or <i>Ngóg-kem</i> , <i>from me</i> .	<i>Ngó-lu-kem</i> , or <i>Ngó-lu-lokem</i> , <i>from us</i> .
Acc.	<i>Ngóm</i> , <i>me</i> .	<i>Ngó-lum</i> , <i>us</i> .
Instr.	<i>Ngóg-kóki</i> , <i>with me</i> .	<i>Ngó-lukoki</i> , <i>by or with us</i> .
Loc.	<i>Ngó-ló</i> , <i>in me</i> .	<i>Ngólu-ló</i> , <i>in us</i> .

2nd Person.

	<i>Singular.</i>	<i>Plural.</i>
Nom.	<i>Nó</i> , <i>thou</i> .	<i>Nó-lu</i> , <i>you</i> .
Gen.	<i>Nóg</i> , or <i>Nóg-ke</i> , <i>thine</i> .	<i>Nó-lug</i> , <i>yours</i> .
Dat.	<i>Nógke kepe</i> , <i>to thee</i> .	<i>Nó-lug-kepe</i> , <i>to you</i> .
Abl.	<i>Nóg-ke-ló-kem</i> , <i>from thee</i> .	<i>Nó-lug-lokem</i> , or <i>Nó-lukem</i> , <i>from you</i> .

Acc.	Nóm, <i>thee</i> .	Nó-lum, <i>you</i> .
Instr.	Nóg-ke-koki, <i>by thee</i> .	Nólug kóki, <i>by you</i> .
Loc.	Nóg-ló, or Nóló, <i>in thee</i> .	Nó-lu-ló, <i>in you</i> .

3rd Person.

*Singular.**Plural.*

Nom.	Bü, <i>he</i> .	Bü-lu, <i>they</i> .
Gen.	Büg or Büg-ke, <i>his</i> .	Bü-lug, or Bü lug, <i>theirs</i> .
Dat.	Büg-kepe, <i>to him</i> .	Bü-lug-kepe, <i>to them</i> .
Abl.	Büg-kem, or Büg-lo-kem, <i>from him</i> .	Bü-lu-kem, or Bü-lug-lo-kem, <i>from them</i> .
Acc.	Büm, <i>him</i> .	Bü-lum, <i>them</i> .
Instr.	Büg-kóki, <i>by them</i> .	Bü-lu-ko-ki, <i>by or with them</i> .
Loc.	Büló <i>in them</i> .	Bü-lu-ló, <i>in them</i> .

The Relative pronouns are Sekó, *who*, and Eng-kó-kó, *what*.

Demonstrative pronouns are Siná, *this*; Esiná, *that*; and Ele, the more remote. They are all declined like the Personal Pronouns.

OF VERBS.

Miri verbs admit of no terminations expressive of number and person.

The following scheme of verbal terminations will serve to show how verbs in general are conjugated.

It may here be remarked that the roots of Miri verbs are generally monosyllabic.

For the purpose of illustration we shall use the verbal roots, Da, *eat*. Gi, *go*. Ká, *see*.

INDICATIVE MOOD.

Present Indefinite, dabang.

Ngó Da-dabang, *I eat*. Ngó Gi-dabang, *I go*.

Ngó Ká-dabang, *I see*.

Present definite, ládabang, or lábang.

Ngó Da-lábabang, *I am eating*. Ngó Gi-ládabang, *I am going*.

Ngó Káládabang, *I am seeing*.

Second Aorist, Káne.

Ngó Da-káne, *I did eat*. Ngó Gi-káne, *I did go*.

Ngó Ká-káne, *I did see*.

Imperfect, Ká-bang.

Ngó Da-kábang, *I ate*. Ngó Gi-kábang, *I went*.

Ngó Ká-kábang, *I saw*.

Perfect, tabang.

Ngó Da-tabang, *I have eaten*. Ngó Gi-tabang, *I have gone*. Ngó
Ká-tabang, *I have seen*.

Future, Pabang.

Ngó Da-pabang, *I will eat*. Ngó Gi-pabang, *I will go*.

Ngó Ká-pabang, *I will see*.

IMPERATIVE MOOD.

The only instance in which this mood really exists is in the *Second Person*.

Ká, or Láng-ká.

Nó Da-ká, or Da-lánká, *eat thou*. Nó Gi-ká, or Gi-lánká, *go thou*.

Nó Ká-ká, or Kálángká, *See thou*.

The termination toká, is commonly used as a more expressive form.
Thus : Da-toká, Gi-toká, Ká-toká.

Gerund, pü.

Da-pü, *to eat, for the purpose of eating*.

Gi-pü, *to go, for the purpose of going*.

Ká-pü, *to see, for the purpose of seeing*.

Participle, taláng.

Da-taláng, *eating*. Gi-taláng, *going*.

Ká-taláng, *seeing*.

Duty or obligation is implied by the termination Káng kapü.

Ngó Da-káng kapü, *I must eat*. Nó Gi-káng kapü, *you must go*.

Bü Ká-káng kapü, *he must see*.

Potential Mood, ládang.

Da-ládang, *can eat*. Gi-ládang, *can go*. Ká-ládang, *can see*.

Sometimes the verb Meká, *to be able*, is added to the gerund, to express the same signification ; Da-pü meká, Gipü meká, Kápü meká.

Negation is expressed by the substitution of máng for the usual termination bang. Thus : Ngó Gi-máng, *I do not go*. Bü Ká-kámáng, *He saw not*. Ngó Dapa-máng, *I will not eat*. Nó Gilá-máng, *you can not go*.

Prohibition is denoted by the use of the word iyoká, after the verbal root. Thus : Gi-iyoká ; *Do not go*. Da-iyoká ; *Do not eat*. Lu-iyoká, *Do not speak*.

ADVERBS.

O', *yes*.

Má, *no*.

Egiddá, <i>truly.</i>	Inkóló, <i>where ?</i>
Supág, <i>now, immediately.</i>	Só, <i>here.</i>
Lekó, <i>again.</i>	Ūná, <i>there.</i>
Ladipó, <i>always.</i>	Aráló, <i>within.</i>
Siló, <i>to-day.</i>	Luló, <i>without.</i>
Iyámpó, <i>to-morrow.</i>	Anindo, <i>near.</i>
Móiló, <i>yesterday.</i>	Mórdó, <i>far.</i>
Róló, <i>early.</i>	Menápe, <i>quickly.</i>
Róuáló, <i>in the morning.</i>	Dengúm, <i>slowly.</i>
Yummáló, <i>in the evening.</i>	

The idiom of the language is the same as that of the Bhotia, and the same latitude allowed in the structure of sentences as is common to all transpositive languages.

SHORT SENTENCES.

- Nóg ámine akan? *What is your name ?*
 Ngóg ámine Kúmólie, *My name is Kúmóli.*
 Nóg bába inkóló? *Where is your father ?*
 Ekum árangesi bábae dang. *Father is in the house.*
 Ele ámie áidá. *That is a good man.*
 Sek ene ioksik se? *Whose knife is this ?*
 Bū gidingki ngo ekiem páke-tabang. *He has killed my dog with a spear.*
 Áchyáló kupák tóka. *Throw it into the water.*
 Áchyáló anga dang. *Fish live in the water.*
 Ede idikó site dang ne? *How many elephants are there there ?*
 Asáre áirupe sárdág. *The wind blows very hard.*
 Esi amie akólu dang ne? *What does this man say ?*
 Ngómápin ádjyókó biláng ká. *Give me a little rice.*
 Ngogke mángke. *It is not mine.*
 Ásópe dutoká. *Sit quietly.*

For the sake of comparison I have here annexed a brief vocabulary of each of the languages we have had under review. I could wish they had been made more copious, or that I had had some model to act upon whereby they might have been rendered more valuable for ready and effective comparison. Should leisure and opportunity, however, admit of my pursuing the line of research I have now taken up, I hope at some subsequent period to be able to furnish more copious, and I

trust more correlatively useful vocabularies, than those now submitted, including all the dialects spoken on the circuit of the Asam valley.

I take this opportunity of acknowledging my obligations to the Rev. N. Brown, for the list of Abor words here furnished, and to Captain J. T. Gordon, for the list of Kachári words kindly supplied by him.

English.	Blotiá.	Chánglo.	Gáro.	Kachári	A'bor	Miri
Above	Teng	Gátán	Khoshák	Gajó	Tong	Táleng
Air	Lungmá	Ridi	Bál, Bálwá	Bar	Asár	Asár
All	Thámche	Thámche-ráng	Járang, Dáirang	Boibo	Áráng	Áráng
Anger	Chigpá	Chigpá. Ró	Khá nángá	Baráp	Már-dung	Márdung
Answer, (verb)			Ággán	Ráidou		Ták-ká
Ant	Jómó	Kháng-jilá	Cbi-brim	Ángkhá	Meráng	Meráng
Arrow	Dá	Mibrung	Brá	Balá	Epugh	Epugh
Ashes	Gothé. Theó	Thu lu	Áp-thá	Hátho-pholá	Med bú	Med bú
Ask	Ditáchi	Jimchó	Shung-bó	Sung	Tungkt	Tátóká
Aunt	(Pat.) Ánni (mat.) Ámchun	(Pat.) Ánye, (Mat.) Ámbi, (Pat.) Ánei (Mat,) Ádei				Ánye
Back, (noun)	Gyap	Gyápá	Jang-gal	Bikhung	Lámku	Lámku
Bad	Zokpó. Dukpó	Má likpó, (lit. <i>not good</i>)	Náujá	Hámmá	Míáng	Aimáng
Bag	Phechi. Jonggá	Pháchá. Jolong	Jolongá (Asamese)	Jolongá	Egin	Sagan
Bamboo	Páksing	Só	Wá	Unwá	E	Dibang
Basket	Lákhung	Kherkó	Kherá	Kháda	Gempá	Pási, (Asam.)
Beads	Jiru. Pchem	Juru	Repok	Lú	Lóng-gó	Daksiri
Bear, (n.)	Dom	Omsá	Mapol	Múphár	Situm	Situm
Beard	Gieó	Mánggrá. Jáó	Khusmang	Dári (Asam.)		Demtóká
Beat	Dúng	Kungshu	Dagbo	Bu	Dídung	Ketkó
Bed	Giáblá	Kángti	Anbo	Tuli	Ketkó	ráng-úde
Bee	Bjyáng	Wagum	Biá	Bere	Táng-úd	Kotá-ká
Beg	Lháng	Phunme	Bíambo	Bí	Kórdung	Aki
Belly	Phóu	Pholáng	Okó	Udei	Aki	Goie
Betlennut	Gohe	Gohe (Sansk.)	Gue	Goi	Goie	Pettáng
Bird	Chyá. Pjlyá	Khá	Dáó	Dáó	Pettáng	

Bite, (v.)	Chotáp	Ngám su	Chikbo	At	Kát dung	Gámotoká
Bitter	Kháp	Khálu	Khá	Gak-khá	Kasáuge	Kodág, Konám
Black	Nángo	Chánglo	Gishim	Gasam	Yoráng	Yáká
Blood	Thák	Yi	Anchi	Thoi	Yi	Yie [lung]
Boat	Gru, Dhu	Dru	Ring	Náu	Etku	Olung, (Asam Há-
Body	Júg	Lusá	Be-en	Madam	Amir	Amir
Bone	Ruitó	Kháng	Geng	Begeng	Along	Along
Bow, (n.)	Zhu	Li	Sri	Jilit	I'	I'e
Boy	Busá	Kotá	Mánde bisá	(lit. Gotho	Miloko (youth)	Kona
			<i>young nan</i>)			
Brass	Jhángchep	Jháng	Pital	Phit-lei	Pitol	Pitol
Break	Chádag	Phoicho	Phebo	Bái	Dirdu	Tirsat toká
Bring	Báyo	Phái	Abábo	Lábo	Látó	Látó ká
Broad	Bóm	Chilu	Gepeng	Gehen	Etág	Atág
Brother	(Elder)	Phógem, Atá, Boning	Adá, Ángjong	Adá, Phong-bái	Ani, Abing	Ani, Payá
	(younger)	Nóchung				
Buffalo	Máhe	Brung	Mátná	Moishü	Menjé	Menjé
Burn	Metáng	Gokcho	Shobo	Sán	Rálik gudung	Rálikguká
Bury	Dóngticháp	Wáng-phió	Khope danbó	Phop	Yutoh	Yutoká
Call	Bóchi	Ráyó	Ákátbo	Ling	Tondung	Goktoká
Carry	Básong	Bó-yó	Ráng-bó	Láng	Bomká	Bomká
Cat	Bjili	Dáni	Mengó	Máuji	Kedári	Mendári
Catch	Jungchli	Chung-shó	Rembó	Ham	Gáktoh	Gáktó ká
Cheek	Námchóató	Naijó, Khurkáng	Nátheng	Kháolái	Mingmo	Mingmo
Child	Waksá	Waksá	Mande Bisá	Bishá	Ko	Ko
Chin	Gým	Rózo	Khud-bó	Khukháp	Asok	Sokdur
Cloth	Zong, Gólag	Zong, Kámong	Bará	Hí	Gásur	Gásur
Cloud	Tin, Sámó	Byang, Mugpó	Mukhá-smá	Jomái	Táling-among	Damir
Cold	Gyang, Khyem	Khurjá, Chángpó	Sná	Guáng	Sikir	Sikir
Come	Shyó	O'lo	Ibábo	Phái	Apólá	Kápe
Cook, (v.)	Chó	Lámshó	Shungbo	Chong	Apin motoká (lit. <i>prepare rice</i>)	Apin motoká
					Tam	Tám
Copper	Jhángnár	Jhang chálu	Támá (Asam)	Thamá	Sou	Goru (Asam)
Cow	Bá, Dáng	Wá, Jábá	Máchu	Musho		Geng kuridág
Crooked	Yochedu	Yochedu, Khórá	Gongeyá	Khen khiá (Asam)	Dirdu	

English.	Bhotiá.	Chánglo.	Gáro.	Kachári.	A'lor.	Miri.
Crow	Ablák, Aólá	Abá	Dakhá	Daokhá	Piyág	Piyág
Cry	Gnu	Gye-phá	Grápó	Gáp	Kábdung	Kábdung
Cut	Tuqtáng	Chorbó	Denbó	Dán	Tári	Pá toká
Dance	Chámkyáp	Chámjyongsó	Chrokbó	Masá	Mordung	Páksó-sofoká
Dark	Nádung	Mirsuphu	Andálá (Asam)	Khmasi	Anún	Rurupdág
Daughter	Búmo	Jámin	Demchick	Phisá	Ome	Annah
Day	Nynmo, Nimá	Ngám	Sál (the sun)	Sán	Longe	Longa
Deaf	Renthó	Nágá thál málá	Benggá	Benggá	Rube	Rube-dág
Deep	Tingpó, Dóngring	Ting	Tho-ówá	Gatho	Eri	Ori-dág
Die	Shi	Si	Sibó	Thei	Sikkai	Si-káng
Dig	Kóó, Tókchikó	Ung-bákchó	Chubó	Jáo	Dúlung	Dútóká
Dog	Khyi	Khu	Achá	Seimá	Ekki	Ekkye
Drink	Thung	Jámsbó	Ringbó	Lung	Dape	Tipe
Dry	Kámpo	Sáng má	Raná	Gorán	Sáng dung	Sáng dung
Duck	Dámjá	Gelendi	Dógep	Páti bángso (Asam)	Pezák	Pezab
Ear	Námehó	Ná	Náchil	Khamá	Narung	Ierung
Earth	Sá	Sá	Áhá	Há	Among	Among
East	Shiár	Shiár	....	Sán-já	Sáng-gá	Dai sáng-gá (sun rising)
Eat	Zó, Já	Zó, Já	Chábó	Já	Dolá	Dolá
Egg	Gongná, Gongthó	Gotham	Bitchi	Dáo-dei	Rok pi (bird's egg)	Rokpi
Elbow	Lábe-chito	Nyung jim	Jáks-khu	Khilá	khunti Lák bin	Lák bin
Elephant	Lángchen, Langp- che	Láng pehi	Mongmá	Háti (Asam)	Sitte	Sittá
Eye	Mig, Mittó	Ming	Mukran	Nigan	Áming	Ámidá
Face	Dong	Zhuk	Mukháng	Mukháng	Mingmo	Mingmo
Fall	Jásoye	Phutkin	Gá-áp-bó	Gugutai	Atok dung	Atok-toká
Far	Nye, Tháring	Ringmá	Chelá	Gajan	Mordo	Mordo
Fat	Bóm	Yetpu, Chilo	Delá	Gupphung	Zinamá	Zinamá
Father	Phá, Ápá	Ápá	Áphá	Áphá	Bábá	Bábá
Fear	Dogme	Yong ken	Khenbo	Gi	Pesoe	Poisodá
Feather	Dhó	Khephu	Gráng	Gáng	Ámide	Ámide
Fight	Chetá	Chetá	Dá-grik-bó	Khumj-lái	Páminsudung	Pamin suká
Finger	Juchung	Brunu	Jáksi	Ási	Lákke	Lákke
Fire	Me	Mi	Wál	Wát	Ene	Ummá

Fish	Gná	Ná-tok	Ná	Engo	Ngá
Flower	Mentok	Bibal	Bibár	Apun	Apun
Foot	Kangpá	Jáá. Játheng	A-theng	Ale	Leppa
Forest	Chenáng	Buráng	Hágrá	Monám	Yumráng
Forget	Jishoi	Gúalbo	Báogar	Mitpan	Mitpan ká
Frog	Byep	Táktak pó	Imbu	Tátik	Tátik
Fruit	Domná	Bithe	Phitái	Aie	Aie
Get	Thópchi	Manbo	Man	Pádun	Pátoká
Girl	Bumchung	Mechik bisá (<i>wo-man child</i>)	Hinjásá	Ome	Ammah
Give	Bu	Anbo	Ho	Bi	Bi-toká
Go	Gró. Song	Iángbo	Tháng	Gikángku	Gikánká. Gitoká
Goat	Rá	Dabak	Burmá	Soben	Soben
God	Lámkenchó.	Chálong. Matte	Ishwor (<i>Asam</i>)	....	Doini tálenge ?
	Khenchógi				
Gold	Sí	Soná (<i>Bengali</i>)	Dorbi	Angin	[kángá Ainá
Good	Lezhum. Leppo	Námá	Gáhám	Kámpo.	Káng- Kángkángdá. Aido
Goose	Angsi	Dogep-dalgábá (<i>a great duck</i>)	(a Hángsi	Pezák	Payang
Grass	Chá	Shám	Gángso	Ing	Ing
Great	Bom	Dellá. Dalgábá	Gedet	Bote	Bote
Hair	Tá. Kyá	Khni	Khnaí	Dumid	Dumid
Hand	Lágpá	Ják	Nákhaí	Elág	Elág
Hard	Sáddingbe	Raktá	Grá	Tolnám	Tornám
Hate	Khamlokpe	Machibo	Magai	Kángeru máng	Kángeru toká
Have	Ié	Chá. Man	Man	Kádung	Kátoká
He	Khó. Khú	Uá	Bi	Bü	Bü
Head	Gó. Gutho	Sháráng	Khoro	Dumpong. Tupko	Tupko. Mito-oko
Hear	Nýán	Niáncho	Khánaó	Tát dung	Tát toká
Here	Thá. Ná	Thá	Beolah	So	So
High	Ringbe	Ringbó	Gajo	Kedon	Adág
Hill	Ri. Phu. Lakhá	Phu	Há-jo	Adi	Adi
Hog	Phákpá	Phákpá	O'má	Eyeg	Eyeg
Horn	Rajó. Raó	Wárong	Gong	Areng	Areng (<i>Deer's</i>). Jegg- reng (<i>Buffaloe's</i>)

English.	Bhotiá.	Chánglo.	Gáro. (Asam)	Kachári.	A'bor.	Miri.
Horse	Tá	Kurtá	Gorei (Asam)	Gorái	Gure	Gore
Hot	Chátum	Chálo. Gumpujá	Ding-gá	Gudung	Igán	Gudorung
House	Chyin-Nang-khang	Phái	Nak	Ná	Ekum	Ekum
Husband	Jáko	Phoibó	Jikse	Bishái	Milo	Milo
I	Ngá	Jáng	Angá	Áng	Ngo	Ngo
Immediately	Dátarang	Omárá	Bák-bák	Gakbrei	Supág	Supág
In	Lá. Naugná	Náng	Ning	Nising	Aráng	Aráng
Iron	Chyá	Per	Shil	Shur	Yogir	Yogir
Ivory	Lángchen cheo	Lámpche	Mongmáni wágám	Háti hátái	Táreng (elephant's horn)	Táreng
Kill	She	Shewá	Dake gálbo	Dángar	Didung	Ditoká
Kiss *	Khákhende	Ch'ubáwá	Khudum	Khudum	Mumpuk	Mumpuk
Knife	Kathálá	Kháchi	Ketháli	Kháthári (Asam)	Áiog	Áiog. Yksi
Knee	Púmá	Gumjing	Jásh-khu	Anthu (Asam)	Lebing	Lebing
Know	Syechi	Sewá	Uía	Mithi	Kendung	Ken toká
Laugh	Gaume	Ngárbá	Khádegbo	Mini	Ngildung	Irdá toká
Little	Nyungebe	Desur	Anthiti. Chonná	Bángái	Ámyedá	Ámyedá
Light, (n.)	Dángsangsang	Ngám	Chárang	Chráng	Puange	Puange
Lightning	Lányóme	Tanglephá	Ri-phrájá	Dumái	Yári	Yári
Look	Táchi	Gocho	Nibo	Nu	Kárdoh	Kár toká
Long	Ringbe	Ringbu	Rowá	Ga láo	Bordong	Áiárdong
Mad	Khyechu	Námátálá	Phágálá (Beng.)	Báoliá (Asam)	Ngúadong	Ngúadong
Man	Mi	Songó	Mánde	Mánsé	Ámie	Ámie
Many	Bothur	Bángá	Bángá	Jábrá	Alummá	Alummá
Mat	Leshá	Am	Am	Em	Epoh	Epoh
Medicine	Bálep	Kotholo. Chugir	Shám	Muli	Dhumá	Dhumá
Milk	Men	Máu	Shok	Gákhir (Asam)	Ánú	Ániúg
Monkey	Om	Nú	Shok	Mokhorá	Sibie	Sibie
Moon	T'yu. Pchyá	Jálá	Mákhre	Nákhábar	Polo	Polo
Mother	Dáwá	Láni	Já	Ái. Bimá	Náne	Nána
Mouth	Ámá. Ái	Ámá	Ámá. Ái	Khugá	Népáng	Náppáng
Name	Khá	Noáng	Khushuk	Nává	Ámin	Ámin
Near	Ming	Ming	Bimung	Kháthi	Mong-yo	Ánuidág
Neck	Boloká. Nidálu	Iálo. Jábráng	Sephráng	Godo	Áling	Liupang
	Kyam	Tongtong	Gitok			

Nest	Tháng	Shiun	Bi-thup	Dáo dánh	Asub	Asup
New	Serpá. Sáp	Singmá	Getál	Gadán	Ani	Anidág
Night	Chennó. Nummó	Bináng	Wálo	Hor	Kámo	Kyem-mo
No	Má. Míngó	Má. Máyang	Já	Nāngá	Má	Má
Noise	Kusó. Kye	Shádere	Jik-jáká	Hái (<i>Asam</i>)	Agom	Agom
North	Jáng	Góh	...	Sáh	Linggi	Ket pong
Nose	Lhápá	Náwun	Gungthung	Gonhong	Nobung	Nye wung
Now	Dataráng. Dengtse	O márag	Dáno	Dáno	Supág	Supág
Oil	Num. Markhu	Si. Memsi	Tho	Tháo	Tuláng	Tuláng
Old	Gyepó	Gátpu	[Leó Getcham	Borái (<i>Asam</i>)	Aku	Aku
Open	Shuptáng. Dejá	Phijó.	O'bo	Kheng	Tá toká	Tá toká
Paddy	Re	Bár	Mi gilgi náng (<i>rice with the husk</i>)	Mái	Am	Am
Place, (v.)	Zhá	Théi	Dan bo	Din	Medung	Me-toká
Plant, (v.)	Shingchu	Shingcheó	Gebo	Gái	Letto	Let-toká
Plough, (n.)	Khami	Lángle	Náng-gri	Náng-gal	Arigmo	Arig mo
Pull	Then	Jángchó	Shálbo	Bo	Sodung	So-toká
Push	Phítáng	Brekjó	Shket bo	Nárhót	Medung	Me-toká
Quarrel	Thámongiyapme	Kholong	Shái grikbo	Náng jolái	Lumindung	Lumintoká
Quickly	Bángyáp	Dojonde	Bák búk	Gukhri	Menápe	Menápe
Quietly	Chánde	Supte	Kháshne	Shri shri	Asupe	Asupe
Rain	Chyap	Namsu	Mokhá	Mokhá	Pedong	Pedong
Raise	Thu	Dungsho	Dethumbo	Dikhang	Zoto	Zoto ká
Rat	Bitthi	Pichrubá	Moshe	Injud	Kebung	Kebung
Ratan	Mu	Menji	Re	Ráidáng	Esong	Esong
Rice (<i>cooked</i>)	Tó	Tó	Mi	Mikhlám	Apin	Apin
Rice (<i>uncooked</i>)	Chum	Khu	Merong	Mairong	Ambin	Ambin
Ripe	Chochome	Minpá	Manná	Gomon	Mindung	Mindung
Rise	Lóng	Thinsbo	Chákhát bo	Sikhát	Dárepto	Dáreptoká
River	Chu	Rijukpó	Chi-ring	Daimá	Botte	Abung
Road	Lám	Lám	Rámá	Námá	Lámbe	Lám
Run	Jyukte. Chong	Che-e	Khát bo	Khát	Dup to ká	Duptoká
Salt	Chá	Inchá	Khári (<i>Asam Pot-ash</i>)	Chang khári	Allo	Allo

English.	Bhotia.	Chánglo.	Gáro.	Kachári.	A'bor.	Miri.
Sand	Bjim	Bechá	Ancheng	Báli (Asam)	Shie	Sullie
See	Táchi	Goho	Ni-bo	Nái	Kúrdung	Kár toká
Seek	Swichi	Lamcho	Am-bo	Nábái	Mátar dung	Mátartoka
Sell	Chongtang	Chungsho	Phál bo	Phál	Kodung	Kotoká
Short	Thungko	Dája. Thumo	Khándeká	Gáhái	Andeng	Adyá dág
Shut	Chechyí	Chumeho	Chbo	Pháng	Pokom	Pokom toká
Silver	Ngui	Tangká. Ngui	Rupá	Rup	Amel	Amel. Rup
Sing	Lucháp	Ngáng áo	Chering bo	Rujáp	Pak song	Paksong
Sister	Azhim(elder), Sing-mó (younger)	Ano (eld.) Nány-íng (younger)	Abi (eld.)	Ano Bái (eld.)	Búrne	Atungá
Sit	Deh	Lángsho	Achungbo	Jo	Dulá	Du toká
Skin	Pagpá. Kóó	Mungná	Bigil	Bigur	Asig	Asig
Sleep	Nye	Ipácho	Thubo	Thentho	Immi	Immi. Iddo
Slowly	Golebyá	Chápte	Kháshim kláshim	Lásei lásci	Asope	Asope
Small	Chungkó	Dezá	Choná	Mudái	Amiyo	Amiyene
Smoke, (n.)	Dupá	Mugu	Wálku	Ukhundi	Miki	Mikye
Snake	Brul. Ben	Buchilá	Chip-o	Jibo	Tábi	Tábe
Son	Buh	Zhá	De-phánthe	Bishá. P-sáila	O'	Áue
Soul	Bung	Shiong	Jang-gi	Jio	Áiid	Yáue
Sour	Chup	Churpu	Mosbenggá	Maikhí	Kune	Kunamá
South	Má	Dong	....	Khlá	Soko	Soko
Speak	Láphe	Iekcho	Agábo	Kuráng. Raino	Agamlu-toká	Agamlu-toká
Stand	Lounge	Thungsho	Chádenbo	Gasang	Dág toká	Dág toká
Star	Kármá. Kam	Murgeng	Jáshki	Hátolthi	Tékár	Tákár
Steal	Au	Gorbán	Cháubo	Sikhon	Dot pyoug	Dotpi-toká
Stone	Do	Lung	Rong	Lanthái	Eling	Eling
Stop	Deh	Chc. Nongsho	Ash-ku	Thá	Dúláh	Dúláh
Strong	Khekóye	Shiejáká	Búlrákhá	Balagrá	Rálnám	Rálnáme
Sun	Nýiná	Ngam	Sál	Sau	Arung	Daiyá. Arung
Sword	Jiring	Choáng	Millám	Imphe	Yaksá	Yoksá
Take	Básho	Bui	Abo	Lá	Bom	Bomtoká
Thunder	Dhuke. Kyebe	Mungpholá	Makkhá klámá	Khurung	Domír	Domir mirdá
Tiger	Ták	Khailá	Máchá	Masá	Sunyo	Sunyo
Tobacco	Támaku	Tánku	Táuáku	Thámku	Dbuwá	Dumwá

To-morrow	Nángpá	Námaying	Khinápo	Gábun	Iyámpo	Iyámpo
Tongue	Chye	Lí	Shre	Chálai	Aiyo	Ioper
Tooth	So	Shiá	Wágon	Háthái	Aye	Aye
Tree	Jonshing	Shing	Bol	Bong pháng	Shine	Ishing
Village	Thong. í	Dung	Shong	Gámi	Dolung	Dolung
Uncle	Akó. Azhong	Achúng. Ajim	Áwáng. Mámá	Áyong. Ámái	Páte. Pái	Páte. Pái
Want	Góbe	Sásphe	Náng bo	Mángo (<i>Asam</i>)	Ngombi	Ngom toká
War	Chetá	Chetá	Dákre ká	Ron (<i>Asam</i>)	Mímág	Mímág
Water	Chhu	Ri	Chi	Doi	Así	Achye
West	Nug	Likhe. Nug	....	Chenáp	Wáng	Daiúáng (<i>Sun-set</i>)
White	Káp. Kápo	Bálungbo	Gupok	Guphut	Yáun	Kámpo
Wife	Mobjye	Moibo	Michek	Bihí	Meng	Miyeng
Wind	Lung	Ridi	Bál	Bár	Asár	Asár
Woman	Amchó	Moibó	Michek	Hinjo	Menge	Mimmo
Wood	Shing	Shing	Ámbal	Bon	Esing	Esing
Work	Láh	Leh	Gáunbo	Hábámáo	Ageridung	Ager toká
Year	Ló	Ning. Ló	Bilsi	Basor (<i>Asam</i>)	Dítág	Dítág
Yes	Ing	Ong	O'e	O'í	Arwe	Hü. Awe. Eggidá
Young.	Zhem	Yonmo	Phánthe	Jala	Yámye	Yámye
One	Chi	Thur	Shá	Che	A'ko	A'ko
Two	Nyi	Nyik-ching	Gini	Nái, or Gni	Ani	Aniko
Three	Sum	Sám	Githom	Thám	Angom	Aumko
Four	Zi	Phi	Bri	Bre	Api	Apiko
Five	Ngá	Ngá	Bongá	Bá	Pilango	Angoko
Six	Tu	Khung	Dok	Ro	A'kye	Akengko
Seven	Dün	Zun	Sni	Sni	Konange	Kinit ko
Eight	Gyed	Yen	Chet	Ját	Pini	Pin'ko
Nine	Gú	Gú	Shkú	Chku	Kinide	Konángk
Ten	Chá	Se. Shong.	Skong	Jí	Iinge	Uying ko

A Brief Note on Indian Ethnology, by B. H. HODGSON, Esq.

[The Editors of this Journal have great pleasure in being permitted to reprint the following short but highly interesting Preface to Mr. Hodgson's valuable work on the Aborigines of India. It affords such an exposition of the extensive bearings and high interest of Indian Ethnology, and of the mode in which this important subject should be treated, as at once to stimulate and direct future research. They further take this opportunity of again strongly commending to investigators the propriety of adopting uniformity of system, without which their researches will lose half their value; and in the matter of vocabularies, to make Mr. Hodgson's the standard. Upon points of this kind there will always exist slight differences of opinion; but these should give way to the important considerations alluded to; and if we are to be guided in this matter by the experience and judgment of any one man in India, surely none are entitled to higher respect than those of Mr. Hodgson.]

All those who are conversant with ethnology are aware that the pagan population of India is divided into two great classes, viz., the Arian, or *immigrant*, and the Tamúlian, or *aboriginal*, and also, that the unity of the Arian family, from Wales to Assam, has been demonstrated in our own times by a noble series of lingual researches—researches which have done for the history of Man a service analogous to that done for the history of the globe he inhabits by the fossil investigations of Cuvier.

The moral and physical condition of the several branches of the Arian race having been well known prior to these investigations, their sole object was to recover the clue to the common connexion and relationship of all the Arians, notwithstanding the obliterating effects on speech of ages of diverse social progress and of unrecorded migrations over half the globe's surface, and notwithstanding the striking physical changes worked in the lapse of ages by settlements in every clime, from the Equator to the Arctic circle. What a glorious triumph of literature to bridge such a profound and vast gulf!

The Tamúlian race, confined to India and never distinguished by mental culture, offers, it must be confessed, a far less gorgeous subject for inquiry than the Arian. But, as the moral and physical condition of many of the scattered members of the Tamúlian body is still nearly as little known as is the (assumed) pristine entirety and unity of that body, it is clear that this subject has two parts, each of which may be easily shown to be of high interest, not merely to the philosopher

but to the statesman. The Tamúlians are now, for the most part, British subjects: they are counted by millions, extending from the snows to the Cape (Comorin); and, lastly, they are as much superior to the Arian Hindus in freedom from disqualifying prejudices, as they are inferior to them in knowledge and all its train of appliances—a fact of which the extensive and important uses now making of the Kól or Dhánger race, offer a valuable exemplification. Yes! in *every* extensive jungly or hilly tract throughout the vast continent of India there exist hundreds of thousands of human beings in a state not materially different from that of the Germans as described by Tacitus. Let then the student of the progress of society, of the fate and fortunes of the human race, instead of poring over a mere sketch of the past, address himself to the task of preparing full and faithful portraits of what is before his eyes; and let the statesman profit by the labours of the student; for these primitive races are the ancient heritors of the whole soil, from all the rich and open parts of which they were wrongfully expelled by the usurping Hindus.* It is *one* great object of this research to ascertain when, and under what circumstances this dispersion of the ancient owners of the soil took place, at least to demonstrate the fact, and to bring again together the dissevered fragments of the body, by means of careful comparison of the languages, physical attributes, creed and customs of the several (assumed) parts. It is *another* object, not less interesting, to exhibit the positive condition, moral and material, of each of these societies, at once so improveable and so needful of improvement, and whose archaic status, polity and ideas offer such instructive pictures of the course of human progression. Surely a subject so worthy, as this latter one, of the best attention and ablest examination ought not to be treated superficially, or as if we aimed merely to learn how far the aborigines have a common tie of descent. It is the great purpose of my copious and systematic vocabulary to display accurately the point of advancement which the aborigines have reached in thought and in action. And the more I see of these primitive races, the stronger becomes my conviction that there is no medium of investigation yielding such copious and accurate

* It can hardly be necessary for me to say that I do not entertain the idle notion of now ejecting the Hindus and replacing the Aborigines, but that of drawing well-informed heedfulness to the condition and claims of the latter.

data as their languages. Their physical and mental condition is exactly portrayed in their speech, and he who can analyse it and separate the foreign elements, has the key to the amount, and sources too, of their civilization.

I have said that the unity of the Arian race has been demonstrated chiefly through lingual means. We have now similarly to demonstrate the unity of the Tamúlian race, an interesting but a difficult task ; for there is an immense number of spoken tongues among the Tamúlians, whereof I have already ascertained not less than 28 in the limited sphere of my own proposed inquiries ;* and all these, though now so different as to be mutually unintelligible to the people who use them, require to be unitised, while one of the highest authorities† on such points fairly declares that he cannot tell what constitutes identity of language. It is clear therefore to me that in this inquiry we shall require all the helps within our reach, and that a copious vocabulary, as well as a rudimentary grammar, of each tongue, will be indispensable. But the rudiments of grammar are to be had only with extreme toil, as creations of your own, from the crude element of very corrupt sentences supplied by unlettered children of nature ; and, in proportion as all such grammars are likely to be deficient, in the same proportion do copious vocabularies become more and more desirable. Besides, summary vocabularies are apt to deal with generals, whereas particulars embody the character and racy virtue of speech. But homebred words are all *very* particular, and proportionably numerous ; while general terms, if more conveniently few, are less characteristic and very apt to be of exotic origin. Take the English general term to move ; it is Latin and one ; but of the numerous sorts of especial motion (to hop, to skip, to jump, to tumble down, to get up, to walk, to fly, to creep, to run, to gallop, to trot), all are “genuine Saxon, by the soul of Hengist.” Moreover it should be remembered that general terms are precisely those which rude races rarely understand or employ, and

* I confine myself to the Aborigines of the mountains and the Tarai between Kumaun and Assam, a rich and extensive field of research. But I hope that other enquirers will, under the auspices of the Society, join me to complete the investigation. For the enumeration of the tribes see page 138.

† H. H. Wilson's preface to the Mackenzie Papers. Wilson's scepticism is somewhat wanton and affected : a sly hit at ignorance ?

hence by the adoption of such words in a summary ethnological vocabulary we shall probably miss the real import of words, and with it the power of comparing one language with another, since different respondents are not at all likely to give real equivalents or identical terms, unless the precise import of what is asked be thoroughly apprehended. There is yet another snare incident to vocabularies of a few general terms, even when of obvious meaning, to wit, that in the case of any general term you may get a word expressive merely of sex, age or other incidental distinction, from one respondent, and a word expressive of some other such distinction from another, as ox, bull, cow, heifer. The only safe plan therefore is to take specific terms, and a sufficient number of them, reserving abstract terms merely to illustrate grammatical structure, or the mental condition of the tribe you are investigating. Now, the long and perfect dispersion and insulation of the several members of the Tamúlian body have led to an extremity of lingual diverseness which, as contrasted with the similarity of their creed and customs, is the enigma of their race ; and for the reasons assigned it is an enigma which assuredly no Œdipus will solve except by *dint of words*. In Hindi and Urdu, though structure is the same, vocables make a difference which is broad and clear, owing to the evidently foreign elements of the diversity. Not so, however, in the Tamúlian tongues, in which there is very little of foreign element : all is homogeneousness in the vocables, and from its sameness of kind is less open to distinct separability. A summary comparative vocabulary was framed some years back by that able and zealous enquirer, the Rev. Mr. Brown, and it has been extensively filled up with the dialects of the mountaineers round Assam. But, in applying this vocabulary to the uses of the present Essay, I have found it quite insufficient to the ends in view ; to raise, not to solve, doubts ; and in reference to this question of the adequacy or otherwise of a very limited number of words even of a primitive character, I request particular attention to the fact, that the popular opinion of the decisive nature and effect of such words, propagated by that able polyglottist, Abel Remusat, has been lately shown to be *far* from decisive by Schott, whose observations on the subject may be seen, in lucid epitome, in Prichard's Physical History.* Mr. Brown's words are scarcely of that kind which Remusat justly laid stress on as "pre-

* Vol. IV. p. 395, and the following.

rogative instances" of speech.* They are also, I think, much too few in number to yield decisive results, even had they been quite faultlessly selected. Any vocabulary that aspires to be useful, must, however summary, contain a fair portion of words belonging to each and all of the "parts of speech," and must also give the cardinal numbers, at least down to 10. I am well aware that the prolixity of my own vocabulary may be objected to. But let it be remembered that I have a high object, wholly extrinsic to the mere lingual testing of ethnic affinities, and that is, the ascertainment of the physical and moral condition of the primitive races, which are the objects of my labours, and that I hold there is no medium of such ascertainment comparable with their languages. But I have no hesitation in adding my conviction that mere ethnological affinities cannot be satisfactorily tested by summary vocabularies; that structure as well as vocables must be attended to; and lastly, that even the sheer words of languages so wholly new to us cannot be safely got at unless we seek them in more than one form, and thus obtain means of comparison.

With regard to the *second* object of these inquiries, or the determination of the moral and physical status of each aboriginal people, it is to be observed that, as the Tamúlians have, none of them, any old authentic legends, and are all very uninformed, save in what respects their immediate wants and habitual ideas, it is exceedingly difficult to learn any thing of this sort from them *directly*: their creed especially is a subject of insuperable difficulty, through the sole medium of direct questioning: their customs, again, are apt to afford but negative evidence, because, being drawn from boon nature, they tend to identity in all the several nations; and lastly, their physical aspect is of that osculant and vague stamp, which indicates rather than proves any thing; or rather, what it does prove is general, not particular. We are thus

* For example, light, lux, is a high abstraction which none of my informants can grasp, though they readily give equivalents for sunshine and candle or fire flame. But further, whoever will carefully examine my essay on the affinities of the sub-himalayan tribes in the Journal of the Asiatic Society of Bengal for December 1847 (vocabularies), will find that the lingual traces of relationship between these tribes are by no means correspondent with Remusat's theory. Nor differences nor resemblances are in harmony with that theory, and we have thus a striking practical proof of the value, and necessity indeed, of copious vocabularies as guides to, and indices of, the status of each tribe.

driven back through all the media of research upon the grand stay of a copious vocabulary. It is my fixed conviction that every distinct effective idea must have an appropriate word to express it; that the more important the idea or want (if felt by the *parties themselves*) the more surely will the correspondent term be forthcoming. Now, in regard to the creed of two of these nations (the Bódó and Dhimál), I have toiled for weeks to come at the verity by means of direct questions; and yet, if at this moment I have any distinct notion of the real belief of these people, certainly I am as much indebted for it to my ample vocabulary as to all my direct interrogations. In the vocabulary, I find no adequate word for God, for soul, for future state, for Heaven, for Hell, for piety, for sin, for prayer, for repentance, for pardon; and I apply this broad and sure basis of inference, but without exaggeration, to its legitimate purpose! Nothing can exceed the vagueness of all direct statement on this most important of subjects: the gods (void of godhead: creator, lawgiver, judge) are very angry: why? *not* because *you* have sinned, but because *they* are neglected: they must be flattered with gifts. This is all; *save* what may be surely, if carefully, gathered from a copious vocabulary. I have adverted to the number of people whose speech is to be investigated (28), as well as to the careful and ample style of investigation which I conceive can alone suffice for the realization of the ends in view; for our aim is not to raise doubts but to solve them.* But time is the most precious of all things; and as the present investigation has cost me six months, I purpose to seek aid and help from abroad, furnishing to each of my co-operators the present paper as a model, it being indispensable for purposes of *ready* and *effective comparison*, that all information should take a like direction, and that direction a sound and good one. In submitting therefore the first of an intended series of papers to the Asiatic Society of Bengal, I have the honour to solicit its revision of my labours, in order more particularly to render the form of the vocabulary and grammar as good as may be, containing *all that is essential* and *nothing superfluous*. Should the Society favour me with any such suggestions, or should it practically ratify my present work by printing it, I intend forthwith to have 50 blank and 50 full copies of the Essay printed for distribution†

* See note at the end of this Preface.

† Any person desiring a copy can have it by applying to me at Darjeeling or to Mr. Laidlay, at the Asiatic Society, Calcutta.

to co-operators ; and meanwhile I shall conclude this too long preface with a few explanations of the reasons which have led me to give this particular form to the vocabulary, the grand stay, as I conceive, in these inquiries, for the reasons already given. It will be seen at a glance that my vocabulary is not alphabetical. I think the alphabetical plan liable to two extreme objections ; for we become thus entangled amid synonyma that are superfluous or deceptive, and among vague words that are worse than useless. But, worse than this, the alphabetic plan is void of all that facilitation which is so indispensable towards the accomplishment of the end in view, it being at once most difficult, and most necessary to lend the vagrant minds of our primitive informants some helps towards alertness and steadiness of attention in this to them so new, so strange, and so tedious, a labour. The principle I have proceeded upon is the association of ideas by similitude, contrast and habitual connection ; and I have found this grand principle, (which is to our *cogitative what sympathy is to our emotive faculties*) when understood and applied with the requisite simplicity, to be of great assistance to myself in guarding against vague words, whose name is legion, and of yet more and more important assistance to my primitive-minded respondents. In numberless instances the mutual doubts created by the first word were removed by mere utterance of the correlative or contrasted term ; whilst in each of the arts and crafts the clue furnished by connexion and depeudancy of parts enabled me rapidly and surely to work onwards with the vocables. I purposed also at the same time thus to prepare so many distinct pictures of the state of knowledge in its several departments,* such as it is within the ken and use of the races interrogated (an important part of my plan of absolute as well as comparative estimates) ; and, even when no such knowledge was to be had in the particular case before me, I have carefully preserved the blanks, deeming the negative almost as valuable as the positive evidence—not to mention that, having in view application to other respondents of different nations, it followed that the blanks in one paper might be well filled in another. Still, the vocabulary is too large and too difficult ;

* The table of contents at the end of the Volume, or the separate headings in the body of the vocabulary, will show at a glance how this object has been sought to be gained. Unhappily the headings or titles have been very imperfectly struck off at press.

and it is therefore a great object to reduce it in the complex terms without mutilation, and also to give the essentials of grammar with the utmost simplicity and conciseness; and for aid to these ends I shall be thankful, though no pains have been spared to render the whole paper as it now stands, worthy of the Society's acceptance and a fitting model for future research. Of the three separate people* treated of (the Kóeh, the Bódó, and the Dhimál), I have given physical delineations of the Bódó only, because the faintly yet distinctly marked type of the Mongolian† family is similar in all three, but best expressed (so to speak) in the Bódó features and form. I am not unaware that a great deal has been already done in the line of research which I have now, not taken up,‡ but resumed, and if I have not adopted and followed up the method of investigation of any of the many able men who have, with reference to my present attempt, preceded me in this field, it is not because I am insensible of the value of those labours, but because their diversity is quite opposed to every idea of system, where system is most needful, and *that* the best system: wherefore the corrections of the Society are solicited for my own work prior to its dissemination (as a model) for being filled up by various co-operators either within the limits assigned to myself (if such aid can be had), or elsewhere and beyond those limits.

B. H. HODGSON.

Darjeeling, June, 1846.

NOTE.—The great Scythic stem of the human race is divided into three primary branches, or the Tangús, the Mongol, and the Túrks. The first investigators of this subject urgently insisted on the radical diversity of these three races: but the most recent inquirers more incline to unitise them. Certainly there is a

* I distinguish by language, and assume that wherever there is a broad spoken diversity of tongue unintelligible to neighbours, there is distinct people. The value of these spoken diversities will be hereafter determined as one general result of the inquiry on foot.

† Mongolian? *potius* Scythic.—See the appended note on the subject.

‡ When I went to England in 1844, I possessed vocabularies of all the languages and dialects of Nepal: but these, with many other valuable papers, were lost owing to circumstances I need not dwell on. I have recovered some fragments, and am reconstructing the vocabularies of these dialects upon the plan above delineated.

strong and obvious character of physical (if not also of lingual) sameness throughout the Scythic race; and it is remarkable that this peculiar character belongs also to *all* the Aborigines of India, who may be at once known, from the Cávery and Vigarú to the Cósì and Bhagarati,* by their quasi-scythic physiognomy, so decidedly opposed to the Caucasian countenance of the Arians of India, or the Hindus. I apprehend that there will be found among the Aborigines of India a like lingual sameness, and that very extended and very accurate investigation will consequently alone suffice to test the real nature and import of the double sameness, physical and lingual. That all the Aborigines of India are Northmen of the Scythic stem, seems decidedly and justly inferrible from their physical characteristics. But, inasmuch as that prodigious stem is every where found beyond the whole Northern and Eastern boundary of India, not merely from Attok to the Brahmaputra, where these rivers cut through the Himálaya, but from that point of the latter river all the way to the sea; and inasmuch as there are familiar and trite Gháts or passes over the Himálaya throughout its course along the entire confines of India from Kashmír to the Brahma Kúnd, it follows of necessity that very careful and ample investigation will alone enable us to decide upon the question of the unity or diversity of the Aborigines of India, in other words to decide upon the questions, whether they owe their confessed Scythic physiognomy to the Tangús, the Mongol or the Túrkh branch of the Tartars or Scythians, and whether they immigrated from beyond the Himálaya ("the hive of all nations") at one period and at one point, or at several periods and at as many points. Between Gilgit and Chittagong there are 100 passes over the Himálaya and its south-eastern continuation to the Bengal Bay; while for the *time* of passage, there are ages upon ages before the dawn of legend and of chronicle.

I incline to the opinion that the Aborigines of the *sub-Himálayas*, as far east as the Dhansri of Assam, belong to the Tibetan† stock, and east of that river to the Chinese stock—except the Gárós and other tribes occupying that portion of the Hills lying between Assam and Sylhet; and that the aborigines of the *tarai* and *forest* skirting the entire sub-Himálayas, inclusive of the greater part of the marginal circuit of the Assam Valley, belong, like those last mentioned, to the Tamulian stock of aborigines of the plains of India generally. But what is this Tamulian stock? what the Tibetan stock? and what the Chinese? and to which of the three grand and well known branches of the Scythic tree (Tangús, Mongol, Túrkh) do the Tamulians,‡ the Tibetans and the Chinese§ belong?—I have now said enough to enforce caution and stimulate curiosity, and I pause.

* Alpine feeder of the Ganges, not its Bengal defluent. So Alpine Cósì.

† Notices of the Languages and Literature of Nepal.

‡ The *Tartars* of China are Mantchúrian Tangús. I allude to the Chinese proper.

വർദ്ധിച്ചുപ്രസന്നമാകുന്നതിനുള്ള
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 മേൽപ്പറഞ്ഞവർക്കു കൃതജ്ഞത

On an Inscription from Keddah, by Lieut.-Col. Low.

I have the pleasure to forward to you, to be presented to the Asiatic Society, a fac-simile of another inscription, in the same character apparently as that in which one of the inscriptions lately transmitted to you by me was couched, and which I found very lately, and after that last had been forwarded.

It may not however be of much importance, and I apprehend may prove but some religious text of the Buddhists or some other sects. It was lying under the centre of the foundation of a ruin of an ancient brick building in Keddah, near Buket Murriam. This building had been very small, not more than 10 or 12 feet square. When I raised the slab of stone, it was coated with a tenaceous film of carbonate of lime, produced by the coral stones of the foundation having decomposed. The stone being a sort of slate, this has enabled me to bring out all the letters (a few only being at first visible) by the application of nitric acid. The inscription is in perfect preservation.

I have the pleasure also to send another piece of the Singapore stone; there are several ponderous masses remaining, but that part of the inscription which are on them are the *most* defaced. I will try however, when I have leisure, to copy such parts as are at all capable of being taken off, but the stone is so rough that this will be difficult to accomplish.

Note on the foregoing.

Col. Low's inscription possesses, I think, sufficient interest to warrant the insertion of a reduced fac-simile in the Journal, and I give it according in Plate X. There is no difficulty in recognising in the first two lines the well known formula *Ye dharmma hetu prabhavá*, &c.; but, if I am not mistaken, it is in a form of the Sanskrit alphabet much older than any in which it has been discovered elsewhere. We have in the Museum—thanks to the zeal of Capt. Kittoe—a goodly assortment of Buddhist sculptures from Behar, containing these verses mostly in the *Kutila* modification of the Sanskrit character, which belongs to the

tenth century of the Christian era ; while that of Col. Low's inscription corresponds very closely with the alphabet assigned to the fifth century in Prinsep's palæographic table (J. A. S. Vol. VII. pl. XIII).

Another point of interest in Col. Low's inscription is the substitution of a different couplet for that which usually follows the lines above alluded to. Mr. Hodgson long ago remarked* that there is no necessary connection between the two couplets ; and Prinsep stated,† on the authority of Ratna Pála, that another series of verses follows the *Te dharmma*, &c., in the daily service of the temples in Ceylon. In the expectation that the lines in Col. Low's inscription would prove to be those of the Ceylon ritual, I sent for Ratna Pála and showed him my transcription : but he seemed to have forgotten all about the matter, and was unable to supply me from memory with the verses referred to, or to recognise their identity with those of the inscription.

The subjoined is a transcript of the verses in the Deva nagarí character :—

ये धर्मा हेतुप्रभवा तेषां हेतु तयागता
 तेषां च ये निरोध एवं वादो महाश्रमण
 पाप्मनोच्चोयते कर्म जन्मनां कर्म कारणां
 ज्ञानान्न क्रियते कर्म कर्म भावन लोयते

“Whatever moral actions arise from cause, the cause of them has been explained by TATHÁGATA. What is the check to these actions, is thus set forth by the great SRAMANA. Vice promotes action, and action is the cause of transmigration. He who, through knowledge, performs no action, is not subject to its effects.”

It will be observed that the first line of the latter couplet is identical with one in an inscription from the same neighborhood published in the July number of the last volume of the Journal.

On the subject of the doctrine here propounded, Rájendralál hands me the following note :

“This is but another version of the maxim inculcated by Krishna and other vedantic preachers on the uselessness of *Karma* (religious action originating in the hope of recompence) as a means of

* J. A. S. Vol. IV., p. 211.

† Ibid, p. 138.

salvation. The Hindu sages however maintain "*rajaguna*" (the quality of passion) and not "*tamas*" (darkness or vice) to be the cause of transmigration; but as the consequences of both *rajas* and *tamas* are borne in inferior states of existence, which necessarily imply repeated birth, the disagreement is not of any great importance."—J. W. L.

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*Note on Iron Tension Bridges, by the Rev. J. H. PRATT.*

*To the Editors of the Journal of the Asiatic Society.*

Since my return to Calcutta after an absence of four months I have observed that my friend Major Goodwyn has forwarded to you an article on Iron Tension Bridges, which you have printed in your number for October last. In this article he does me the favour of noticing with approval the Memoir I sent you at the beginning of the same year, on the "Quantity of Iron necessary in a Tension Chain Bridge."

The sole object of my troubling you with the present brief communication, is to point out that Major Goodwyn has made my Memoir say more than I intended it should. In his para. 2 he observes as follows upon the property which I had demonstrated :—

"2. \* This is a very important conclusion; but whilst I freely admit the soundness of the doctrine, I am not fully satisfied as to the correctness of the writer's practical deductions therefrom; viz. that the old system of suspension, consisting of a uniform chain and vertical drop-bars, is the most proper for adoption *under all circumstances*." (See p. 413, Vol. for 1848; the *italics* are mine.)

But I have taken only *one* circumstance into account in my Memoir, and have pronounced an opinion upon *that only*; viz. the consideration of the *quantity of metal* employed in the construction of the Bridge. Some persons had strongly asserted that one advantage of the new system was considerable economy of metal. This gave an importance to the conclusion to which my calculation led.

In endeavoring to come to a decision upon the merits of the Taper-Chain system, when compared with the Common Chain, there are *several* considerations which must be borne in mind and well examined—such as regard, for instance, the elegance of the structure, the convenience

of water-way, the stability or steadiness of the bridge, its durability, as well as the quantity of metal required in its construction. It was to the *last only* of these considerations to which my Memoir referred; and after enunciating the exact theoretical result to which I came, the practical conclusion was stated thus:—

“The *economy of iron* will be practically greatest in bridges where the varieties\* of tension are least. This tells, then, in a practical point of view, against the Taper-Chain system, in the question Taper-Chain versus Common Chain Bridge.”

But the Common Chain Bridge *might* be considered far less *elegant*, or less *convenient* for the passage of boats under it, or less *durable*, or less *stable* than the Taper-Chain Bridge for any thing my demonstration had proved. It was only on the *Economy of Iron* that I touched.

I purposely confined myself to this one point, that I might avoid being involved in controversy. And I thought I was safe from this, as the proof of the proposition I enunciated is a mere piece of geometry; and the brief practical inference from it is so obvious that no one can doubt its truth.

At the time of my committing this demonstration to paper at the request of another friend,† who also proposed that it should be printed, I had begun to take up the question of the comparative stability or steadiness of the two systems, especially when heavy weights pass along the roadway, and its parts are *successively* pressed down; and not simultaneously, as when the bridge is loaded uniformly from end to end, by the greatest weight it can ever have to sustain. This view of the subject *might* have been favourable to the Taper-Chain system. But, I am sorry to say, that I found the subject so inviting, and therefore my

\* By “varieties,” I did not mean *changes* of tension in the *same bar* as different weights were placed on the bridge, but “varieties of tension” in considering the various parts of the bridge at any one instant. Thus, for example, in the common Chain Bridge with vertical suspending rods, the strains of these rods, when the bridge is uniformly loaded, are nearly the same, there is no variety: whereas in the oblique suspending rods in the Taper-Chain, those near the centre are far more strained than those near the ends of the bridge; i. e. there is a greater variety of tension. I have no reason for supposing that the expression I used has been misunderstood. But we never lose any thing by adding to the perspicuity of our language—especially in such subjects as the present.

† Colonel Forbes.



time and thoughts so much in danger of being engrossed by it, at the expense of more important matters, that I felt obliged to tear up what notes I had written. I mention it now only to show that I never conceived that the Memoir you printed for me in your number for January 1848 had entered upon the *whole* subject; but only upon that part of it which I took care to notify, and which appertains to the Quantity of Metal required in the construction.

P. S.—Since sending you the above my eye has alighted upon a passage in Major Goodwyn's article, which explains various expressions which he has in other parts used in reference to my Memoir, and which before puzzled me much, as perhaps they have puzzled others who may have read both communications.

In opening the exposition of his "Resultant System," he says, (p. 419):—"I will now proceed to explain a system which only proposes to do what the formulæ in Mr. Pratt's Memoir says may be done." But there *are no formulæ* in my Memoir; nor is any thing said about formulæ; nor is any reference made to any; nor inference drawn from any. The Memoir is, as I have said, a mere piece of geometry, leading to a remarkable general principle regarding the amount of *tension* in a suspension bridge of any kind, Taper-Chain or not, and therefore the *quantity of metal* necessary for its construction. The demonstration stands alone, and is independent of all hypothesis regarding the form of the bridge.

This, therefore, convinces me that Major Goodwyn must have some other paper in his mind: and that in writing his article he has had both that and the Memoir before him, and has treated them as *one*.

In 1843, when public attention was being called in India to the subject of Taper-Chain Bridges, I gave my voice decidedly against Mr. Dredge's system, to friends with whom I conversed upon the matter, as utterly impracticable, as well as unscientific: and I drew up some mathematical formulæ which might be applied to prove the truth of my assertions, and also to calculate the strains in theory of the various parts of a suspension bridge constructed upon any principle whatever. These formulæ were applied to several examples, among others to the projected Balee Khal Bridge: and as they are now referred to for the first time in your Journal (in the article I am noticing) I may mention as an evidence of their correctness, that, among other results to which they

led, they pointed out that the tendency of the road-way, even should it stand, would be to sink in the middle—which any one who visits the bridge and views it from the river will see is the case: and also that the bridge would not stand, unless the middle link of the chain were considerably strengthened. This last has had a double verification; first in the lamentable fall of the structure; and, secondly, in its subsequent permanence since being reconstructed with the *double* central link which it now has.

These formulæ were printed, I think, in 1846, (but without any explanation of the manner in which they were to be used,)\* as an Appendix to an important Report on the causes of the failure of the Balee Khal Bridge, and the method of its re-construction, in the Transactions of the Royal Engineers. No direct reference was made to the formulæ in the Report itself: they were added probably for future use.

These then must be, I conceive, the formulæ which Major Goodwyn has in his mind in the passage I have quoted from his article of October last. But my Memoir has no connexion with them whatever: nor have I ever put in print any deductions from the formulæ till induced to do so in the present communication.

*Calcutta, March 28th, 1849.*

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*A Seventeenth Memoir on the Law of Storms in India, being Storms of the China Seas from 1842 to 1847, and some of the Northern Pacific Ocean, from 1797. By HENRY PIDDINGTON, President of Marine Courts of Enquiry, Calcutta.*

[Concluded from page 45.]

#### TRACK S.

*ROB ROY'S Manila Typhoon of 13th Nov. 1847.*

The *Rob Roy*, which vessel was dismasted on the 18th November in the Cyclone laid down in the preceding section, met with another

\* An explanation was subsequently sent to the Publisher of the Transactions to supply this deficiency as soon as I was aware that the formulæ had been made public.

Typhoon, in which she was nearly driven from her anchors, and wrecked at the entrance of Manila Bay. At Manila this Cyclone was very destructive.

*Abridged extract from the Log of the Barque ROB ROY, Capt. FRANCIS.  
Civil Time.*

On the 12th November the *Rob Roy* anchored at 6 P. M. in a calm in 22 fs. at the entrance of Manila Bay, with the flagstaff on Corregidor bearing S. S. E. and veered to 45 fs.; a strong breeze springing up from the N. W. let go best bower and veered to 90 fs. on small and 75 on best bower. Midnight hard gale with dark gloomy weather; sea washing over the vessel fore and aft. Bar. marked 29.80 6 P. M.; 29.50 at 8½; 29.30 at 11, 29.20 at 1 A. M.

13th Nov.—1 A. M. small bower parted. At 2 the height of the Typhoon, Ther. 78°. Bar. 29.20; at 4 more moderate; 11 A. M. weighed and made sail for Manila.

During the Typhoon the wind was from N. N. W. to N. E. b. N. and died away at S. W.

REMARKS.

This veering of the wind would seem to indicate a track from the N. ½ E. to the S. ½ W., but we are rather embarrassed to judge of it by what follows, that it “died away at S. S. W.” which would make the Cyclone curve up to the N. W. round Punta Luzon, unless we consider the vessel’s position, which was that of being anchored in a narrow channel, and during the whole time under the lee of the high mountain, of Maribebes, the termination of the lofty coast chain which runs down to the Bay of Manila. The Island of Corregidor also, so near to which the vessel was latterly drifted, that as Captain Francis informs me, the back wave from the rocks was felt, is high, and thus the vessel was completely under its lee when the wind came in that direction. The winds moreover in the entrance to a large bay like that of Manila, may be so variously deflected by the coasts that unless blowing with violence we can scarcely venture upon any deduction.

I have thus marked this track as one coming down from the N. ½ E. to the S. ½ W. The seaman will understand however that this is to some extent conjectural.

*Barque EASURAIN’S Cyclone off the Mindoro Channel, and Straits of  
St. Bernadino.*

I obtained the Log of this Cyclone after my chart was completed, and have thus been unable to include it, but as it occurred in a part of

the China Sea much frequented at that season of the year in which the Palawan Passage is adopted, and is, though not of any great severity, corroborative of the tendency of the tracks here to the Westward, I have not thought it right to omit noting it, especially as the fall of the Barometer was as much as 0.4. in fifteen hours, and we have only hereabouts, as yet, the two Cyclones of the American ship *Panama*, laid down from Mr. Redfield, in the sixth of these Memoirs.

*Abridged Extract from the Log of the Barque EASURAIN, Capt. J. SHIRE, from Singapore to China—reduced to Civil Time.*

The *Easurain* was on the 11th Nov. 1847 in  $11^{\circ} 40'$  North ; Long.  $118^{\circ} 45'$  East ; Bar. 29.76 ; Ther. 84, with the wind W. b. N., a fresh breeze and squalls to midnight, with a head swell ; vessel standing to the N. N. E.

12th Nov.—A. M. the same to noon ; wind hauling to N. West, when Lat. by Acct.  $12^{\circ} 39'$  N. ; Long.  $119^{\circ} 27'$  E. ; Bar. 29.75 ; Ther. 86, and wind increasing. P. M. Wind N. W. increasing to half a gale, with a high sea, and at night threatening with hazy weather and drizzling rain ; prepared every thing for bad weather. Midnight severe squalls with rain and furious gusts.

13th Nov.—At 3 A. M. Bar. 29.35. At daylight the same weather ; 7 A. M. wind S. W., and at Noon W. S. W. when Lat. indiff. Obs.  $13^{\circ} 10'$  N. ; Long.  $119^{\circ} 06'$  East ; P. M. wind moderated at W. S. W. and South.

On the 14th fine weather ; Lat.  $15^{\circ} 07'$  ; Long.  $119.0$  East.

It might at first sight be supposed that this Cyclone, occurring on the same date and so near to that of the *Rob Roy's* just noticed, has some connection with it, but it will be seen on comparing them that the *Rob Roy* anchored at 6 P. M. on the 12th in a calm, while at this time the *Easurain* at 120 miles distant had already half a gale at N. W., and that midnight only it was a hard gale with the *Rob Roy* from about N. N. W. to N. W., as well as we can judge from her note. The veering of the wind also with the *Easurain* is that of a Cyclone travelling out of the Straits of Mindoro, or of St. Bernadino, on a Westerly course, and cannot be reconciled to the track supposed for the *Rob Roy's*, which by its duration also (about 10 P. M. to 6 A. M.) was of very small dimensions, or passing very rapidly, while the *Easurain's* lasted 20 to 24 hours. Had the two Cyclones been but one it must have commenced sooner with the *Rob Roy*, and the shift or veering with the *Easurain* should have been into the N. E. quadrant, and not into the S. E. one. On all these grounds then I should take them as

separate Cyclones occurring at a time when, as will be seen in the following section, great atmospheric derangements were prevalent thereabout. I therefore consider it as an East and West track passing a little to the Northward of the *Easurain's* position on the 13th, or in Lat.  $13^{\circ} 30'$  North.

### TRACK T.

#### *EASURAIN'S Typhoon in the China Sea and Bashee Passage, Nov. 18th to 21st 1847.*

I am indebted to Capt. Shire not only for his log book and Chart, but further for much verbal information and a valuable memorandum on the appearances of the weather, which I shall quote largely in the summary following the Log. This Cyclone furnishes us not only with a new track for the Tyfoons of the China Sea, but moreover for a most remarkable anomalous instance thereof; in a Cyclone travelling to the Northward and then (being as I suppose deflected by the high land of Formosa) curving off to the *westward* of the meridian!—the first Cyclone which we have found so travelling\* in the Eastern Hemisphere, though in the West Indies in the corresponding latitudes this is their common course.

#### *Abridged Log of the Barque EASURAIN, Capt. W. H. SHIRE, from Singapore to China, reduced to Civil Time.*

On the 16th Nov. the *Easurain* was at noon in Lat.  $17^{\circ} 03'$  North; Long.  $119^{\circ} 45'$  E.; Bar. 29.70; Ther.  $82^{\circ}$  with a moderate breeze and fine weather; 2 P. M. wind increasing with a high sea and vessel preparing gradually for bad weather.

17th Nov.—A. M. to Noon wind increasing and weather growing worse, Barometer having fallen to 29.39; Ther.  $82^{\circ}$ . Wind steady at North; Lat. Acct.  $17^{\circ} 13'$ ; Long.  $119^{\circ} 41'$  E.; P. M. gale increasing from North with great violence, veering to N. W. b. N. at 10 P. M.; midnight a hurricane.

18th Nov.—A. M. wind still increasing, laid too under bare poles; 3 A. M. Bar. 29.04. Daylight it fell calm but no sail made, and it soon after sprung up from the S. W. again with fearful squalls and torrents of rain. Ship making bad weather, scudded under foresail and fore topsail. Noon Lat.  $18^{\circ} 04'$  N.; Long.  $119^{\circ} 02'$  E.; Bar. 29.29; Ther.  $82^{\circ}$ . P. M. gale continuing; 7 P. M.

\* The meagre and uncertain notice of the *Don Juan's* at page 33, I have already noticed as one which we cannot rely upon, though from this it seems now probable.



broached to, carried away boats, &c. ; continued to scud till midnight with the wind still at South.

19th Nov.—At 2 A. M. Foresail blew away and the ship was compelled to heave to again ; Noon Lat.  $19^{\circ} 10'$  North ; Long.  $119^{\circ} 30'$  East ; Bar. 29.42 ; Ther. 79.0. P. M. wind South ; Tyfoon till midnight and ship driving to the Northward.

20th Nov.—Wind still at South, somewhat moderated. Daylight kept away to repair damages. Noon Lat.  $20^{\circ} 21'$  N. ; Long.  $120^{\circ} 13'$  East ; Bar. 29.45. Wind still at South. At Noon hurricane came on still more severe with a cross turbulent sea rendering it dangerous to run. At 2 P. M. hove too. Sunset more violent to midnight. Ship from 2 P. M. driving to the Northward at the rate of about  $3'$  per hour on to the Vele Rete\* rocks, the violence of the wind and sea being such that it was impossible to steer any kind of course to clear them.

21st Nov.—Midnight suddenly fell calm, a calm of the most dangerous description, as the ship was rolling helplessly with a tremendous lee sea ; Bar. falling to 29.25. At 1 A. M. a faint air sprang up from the Northward ; set the close reefed fore-top-sail to get her head to the Westward, but had hardly done so when a most dreadful hurricane burst upon the ship from the Northward, laying her upon her beam ends and exposing her deck entirely to the previous heavy sea from the Southward ;† and at the same time a frightful sea came rolling down from the Northward ; lost fore and main topmasts ; ship now drifting to the Southward again ; Noon Lat.  $20^{\circ} 33'$  N. ; Long.  $120^{\circ} 30'$  East ; Bar. rising to 29.50 ; P. M. wind North but moderating ; ship lying too till midnight.

22nd Nov.—A. M. Daylight moderating ; made some sail. True course made W.  $\frac{1}{2}$  N. ; Noon Lat.  $20^{\circ} 29'$  N. ; Long.  $110^{\circ} 37'$  East ; Bar. 29.76. Ther. 78.00. P. M. wind N. E. ; moderate gale with a cross turbulent sea ; at midnight moderate.

23rd Nov.—Lat. Noon  $20^{\circ} 17'$  N. ; Long.  $118^{\circ} 15'$  East ; Bar. 29.84. Ther. 80. Ship arrived at Hong Kong on the 25th.

*Captain SHIRE has enhanced the great value of his contribution to our science by the following notes on the appearances of the weather, the sea, the compasses, &c., which I print with some slight abridgements, entire, before giving my own remarks :*

On leaving Singapore on 26th Oct. 1847, from the entrance of Singapore strait until on the coast of Palaworn, 10th Nov. had remarkably clear

\* So in the Charts, the proper name no doubt is the Spanish *Las Velas Rotas* ; (the torn sails.)

† See further the remarks on this dangerous incident of a lee-sea in the height of a Cyclone.



weather with calms, the high peaks of the Natunas having a peculiarly sharpened clear appearance, and all the other land that we passed appeared to be much more elevated, and was visible to a greater distance than usual. On the change of the moon the appearances altered, and indistinct flashes of lightning were visible, without any dark clouds, but on the next day a very heavy squall came on suddenly and disappeared as quickly again, leaving the air as calm and clear as before ; but the most remarkable circumstance of the voyage was the remarkably clear and well defined appearance of the horizon at night. Although at the period when the moon shews least light, it seemed as if some artificial or phosphoric light were present relieving, the natural dimness which more or less prevails about the horizon line at night; and in all quarters the stars were as distinctly seen rising and setting as the sun at sunrise, or as the moon when she sets. When I told the Singapore people of this on my return they said that it is a general precursor of a tyfoon in the China Sea, and my own experience in the Arabian sea, where I saw the same thing, confirms me in thinking that it deserves to be noted.

On clearing the reefs, and arriving on the coast of Luconia the weather became thick and drizzly, and we had hardly time to get ready by sending down the upper spars before it came on most furiously, first at N. W. then veered to West, and finally to S. W., at which point about daylight on the morning it fell a calm, but it was a calm of a different description from occurrences of the same kind after ordinary gales. The whole atmosphere appeared as one thick curtain (without a break any where) of thick fog-bank, if I may use the expression, blending the water and sky in one continued mass, and accompanied by that dull, melancholy sound described in the Horn Book. It remained this way for half an hour, and then freshened up rapidly, and commenced to whistle and roar as it had previously done, and brought a succession of dreadful squalls rendering it impossible to look to windward a moment. It lasted altogether about 36 hours, veered to S. E. and died away as we ran out of it : as the log book shews. We fell in with another in four or five days afterwards, which commenced from the North and N. W. also, but with clear weather, the only angry looking clouds were those collected on the top of the range of mountains which run North and South on Luconia, at the same time that the lower parts were distinctly visible. Another sign which I have noticed in the Arabian sea; and in the Bay of Bengal also, is a very thin transparent cloud that flies generally high up, but with much greater velocity than any other clouds present, and as if it was torn from some larger fragment of the same kind as itself. The Barometer gives but very little warning there, and only falls apparently as the gale increases.

When it veered to South, again put the vessel away before it and scudded her until she broached to, and we could scud her no longer ; we then lay to and were driven, whether we would or not, in the direction of the Vele Rete rocks. It

was hopeless to try and keep her away, as she would not pay off, and had the calm centre not providentially passed over us again, the ship and all on board in another half an hour would in all probability have perished.

The calm was precisely of the same description as the former one, but it shifted more suddenly, and the shock, roar and fury of the wind was more instantaneous, and terrible; the vessel was thrown on her broadside and the deck was instantly filled by the previous overwhelming sea that rushed in from the Southward, which must soon have torn to pieces any vessel if exposed to its fury long, but fortunately with the Northerly wind there came a perfect deluge of rain which speedily reduced the previous sea, and kept the new one from rising.

The Barometer rose rapidly as the rage of the Cyclone passed on, and by daylight next morning there was a decided improvement in the appearance of the weather.

I will mention another circumstance that may be perhaps interesting, as it was certainly new and startling to me, and that was that we could get none of our compasses to remain steady, but at every succeeding burst of those heavy squalls they spun round and round eight points at a time, and we had no other means of steering but by the roll of the sea and the feel of the wind upon the back part of the head, and this continued for some time after the gale had passed, and rendered the approach to the land upon any safe course very precarious. Ropes on board of a ship that are kept at a great degree of tension, such as the Royal halyards, I have frequently noticed previous to the coming on of a breeze when the weather is apparently very fine, emit a peculiar kind of singing noise, and although it may seem whimsical to say so, whenever I hear it I begin to look round and see that all is ready for emergencies, as on two or three occasions of unsuspected bad weather, whether accidentally or not, I have noticed this peculiarity.

#### REMARKS.

This Cyclone deserves our most careful consideration on many accounts, but principally from its being the first authentic record we have of a Cyclone curving off to the Westward when approaching the tropic; though it had already been conjectured by Mr. Redfield, Col. Reid and myself\* from analogy that this might take place on the coast of China.

We find, then, that on the 17th, the *Easurain* was at about 40 miles from the Western Coast of Luconia, in  $17^{\circ} 13'$  North, with a gale from the North, which at 10 P. M. veered to N. W. b. N., and at midnight was a hurricane.

\* Horn Book for the Eastern Seas, p. 24.

At this last time therefore the centre must apparently have been to the N. E. b. E. of her, either inland or upon the coast of Luzon, (taking it to have been only 80 miles in diameter in the last case,) and as from midnight to daylight when it fell calm, the vessel was lying too, she had not made much distance to the Southward. Capt. Shire's Chart places her about this time in Lat.  $16^{\circ} 55'$ ; Long.  $119^{\circ} 35'$ ; and the shift here was from N. W. b. N. to the S. W. This would show a track off the land, but I learn from Capt. Shire that it drew to N. N. W. and West before it sprung up at S. W. veering to South by Noon, when the vessel had run 69 miles to the Northward, as she had reached  $18^{\circ} 04'$  North.

It would seem then, that at this time, or from midnight to nearly Noon, the Cyclone had either been forming or descending\* about the ship's position, or it may, not improbably, have been forcing its way over the high land of Luconia, and this, whether formed upon the land, or as is also probable coming in from the Northern Pacific, as the Cyclones of the Bay of Bengal cross the Peninsula of India and descend on the Arabian Ocean. I have sufficiently remarked in other places† on the irregularities which may and do take place in the wind circles when a Cyclone is in the neighbourhood of high land, so that I do not deem it necessary to repeat these observations here to shew that we cannot from the mere direction of the wind when so close in with the coast, ascertain correctly the bearing of the centre, especially when, as in this case, the body of the Cyclone is partly or wholly upon the land.

I take then the place of the centre at this time only, viz. daylight on the 18th, as the first positively well defined position for it, and we find that from this time to Noon of the 19th, she was scudding before it until compelled to heave to with the wind due South, blowing a Tyfoon; the vessel alternately heaving or broaching to, or bearing up to scud, as her distress allowed, nor did this vary till midnight of the 21st, when it fell calm.

\* "Forming or descending." My present theory is, (see Sailor's Horn Book,) that Cyclones are rarely if ever found at the surface of the earth, but in the atmosphere above, and that they descend in disk-like whirls to the surface of the land or ocean.

† See Memoirs and Sailor's Horn Book, p. 76.

The Barometer we find was on the 16th at 29.71, and had fallen to 29.39 at Noon of the 17th, and at 3 A. M. of the 18th, it was at 29.04 before and during the calm, and rose again to 29.29 at Noon, shewing that though the wind was rapidly veering from N. N. W. to West, by S. W. to South, and the vessel therefore in the Southern and Eastern verges of the calm centre, yet the Cyclone itself was travelling out to the Westward. On the 19th, the Bar. is noted as at 29.45, which shews, so far as the Barometer enables us to form any judgment when so near the centre, that for this day and a half, or two days, the Cyclone was running up with the ship, and its fall again from 29.45 at Noon to 29.25 at midnight of the 20th—21st shews also that it was again approaching the vessel and curving off to the Eastward past the South point of Formosa, so as to bring the *Easurain* again into the calm centre.

During this remarkable track the centre of the Cyclone must have been to the Westward of the ship throughout, and it must have been also travelling at a slow rate, since the vessel's drift when hove too was sufficient to keep the wind always about South, and it is only during her first run that she brought the wind as far as S. E.; her subsequent bearing up being only for about five hours at six knots per hour. We may infer however from this that the Cyclone was of some considerable extent, and its centre at some distance, for had it been small and the centre close, the wind would necessarily have been more variable, and its direction have altered quickly with the vessel's position within the storm circle. On this account then, I conceive that we cannot allow the centre to have been on an average at less than 75 miles to the West of the ship, giving to the whole Cyclone a diameter of 150 miles.

The track, as I have said before, must be one nearly parallel to the vessel's course and then curving rapidly over to the Eastward towards midnight, 21st,—22nd. Capt. Shire having carefully given on his Chart the position of the vessel at midnight as being in Lat.  $21^{\circ} 16'$ ; Long.  $120^{\circ} 38'$ , we are enabled to estimate the rate of travelling of the Cyclone with some degree of accuracy, for as the distance from this point to daylight of the 18th, is about 270 miles in a strait line, with allowance for the curving of the storm as I have marked its track, we may call it 300 miles. This distance it took 90 hours, from 6 A. M. 18th to midnight of 21st,—22nd, to travel, so that its rate of progress did not exceed per hour 3.3 miles.

We come now to the calm of midnight 21st,—22nd, and the subsequent shift to the North, which is evidently that of a Cyclone *travelling to the Eastward*, and the wind is marked North to Noon of the 22nd, after which it became N. E. and the Barometer having risen to 29.76, we cannot consider this as any part of the Cyclone which no doubt passed off to the East and N. W., or was perhaps exhausted or lifted up, to judge of the comparative short duration of its Western side.

As this Cyclone, like that of the *Pluto's*, is an especially instructive one, I have placed the track of the ship from Capt. Shire's chart and that of the Cyclone as I have laid it down on the large Chart in a separate compartment, so as to enable the reader to study it with attention. The remarkable track of this Cyclone, as far as it relates to its nearly meridional course, we have an analogous instance of in the Eastern Hemisphere, in that of the *Cleopatra* as analysed in the Fifteenth of these Memoirs, and in the Western Hemisphere we have the Cyclones of the West Indies coming in from the Atlantic and curving off on the coast of North America, from the Floridas to Boston or Newfoundland, and then going off again into the Atlantic. Hence we must not be surprised that we have now found an instructive instance of this recurring near the Coast of China, though in a lower latitude than we might have expected. There are two or three other matters noticed in Capt. Shire's remarks on these Cyclones, which will deserve attention, and of these the first is the appearance of the atmosphere and land in the China Sea, which was so readily recognised by the residents of Singapore as the precursor of a Typhoon, and has long been known generally to be so. This note on the appearance of the horizon and the stars is worthy of much attention, for every sailor who is accustomed to night observations knows how rare a good horizon is, and that it often requires a keen eye and much practice to enable him to say he can conscientiously depend upon them.

The peculiar moaning noise to which I have referred in various of these Memoirs, was recognised by Capt. Shire, when in the calm centre of his first Cyclone. We have hitherto only known of it at the approach of the Cyclones, but there is no doubt it exists, and it furnishes thus a good warning sign.

Captain Shire furnishes us also with a very clear and remarkable example of the case to which I have elsewhere alluded of a ship being



instantaneously thrown by the shift of wind on her beam ends *against*, and with her deck towards the sea; so as to be for a time and until the rain and opposing wind had somewhat abated the fury of the rollers (for that is the appearance the sea then takes) like a vessel on a reef, which has fallen over to seaward, and no seaman can doubt I think of the necessity of every precaution being taken to meet this fearful complication of dangers should it perchance arise.

The remarks on the effect of the sudden bursts of the squalls on the compasses are new\* and deeply interesting, inasmuch as they go far to shew that the Cyclones are purely electrical phænomena, though of this we want much more confirmation; and I have little doubt that when attention of seamen is properly directed to the numerous signs and effects of Cyclones which have been hitherto unobserved or casually mentioned, or forgotten when the storm was over, we shall have a large harvest of novel and important facts. In the meantime every intelligent seaman, and every friend to science will I am sure join with me in expressing our great obligations to Capt. Shire for this addition to our knowledge.

#### TRACK U.

*Shanghai Typhoon, July, 1848.*

While preparing this Memoir for the press I received from Mr. A. R. Elliot, Master of H. M. S. *Childers*, a very full report on a Cyclone which passed over that place on the 18th July, 1848, and shortly before a letter from Commander J. C. Dalrymple Hay, of H. M. S. *Columbine*, with copy of a carefully kept meteorological register at Amoy from the 18th to the 25th of July, and some especially valuable remarks on the weather and appearances. From the first of these two documents we can estimate pretty nearly the track of this Cyclone, which is still farther to the North than any one we have as yet registered. Mr. Elliot's note, with some little abridgment, is as follows:—

*Notes on the Cyclone which passed over Shanghai on the 20th of July 1848, taken on board H. M. S. Childers, by A. R. ELLIOTT, Esq. Master, R. N.*

On Tuesday the 18th, fresh breezes and steady at S. E. (force of wind 5 to 6) B. C. Q. Barometer rather unsteady and falling from 29.73 at Noon to 29.68 at 6 P. M., where it remained until midnight; wind at this time 4; B. C.



On Wednesday 19th, wind light and unsteady from S. E. to East 3; B. C.; at 6 A. M. Bar. 29.67; at noon E. S. E. 4; B. C.; Bar. 29.67. At 6 P. M. E. N. E. 5; B. C.; Bar. 29.66; between which and 8 P. M. the wind shifted to North 4; B. C.; at 11 N. by E. and at midnight N. E. 5; B. C. Bar. 29.59.

On Thursday 20th wind N. E. Fresh and squally, overcast and cloudy with drizzling rain. At 5 A. M. struck topgallant-masts; pointed yards to the wind. At 6 A. M. wind increasing with squalls; force wind 7; gloomy with drizzling rain.

|                                |             |                                                                                                                                                                                                                                                                                                                                               |
|--------------------------------|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| At 6 A. M. wind N. E. 6 to 7   | Bar. 29.47. | Struck topgallant-masts.                                                                                                                                                                                                                                                                                                                      |
| " 8 " " N. E. 6 to 7 Q         | " 29.35.    | Bent sheet cable, blowing very fresh in squalls.                                                                                                                                                                                                                                                                                              |
| " 8.50 " " E. N. E. 8          | " " 29.33.  |                                                                                                                                                                                                                                                                                                                                               |
| " 9.15 " " E. N. E. "          | " " 29.30.  | Rain.                                                                                                                                                                                                                                                                                                                                         |
| " 9.45 " " E. N. E. "          | " " 29.27.  | Struck lower yards and topmasts; blowing hard and looking very wild and threatening.                                                                                                                                                                                                                                                          |
| " 10.22 " " E. N. E. "         | " " 29.23.  |                                                                                                                                                                                                                                                                                                                                               |
| " 11.00 " " E. N. E. "         | " " 29.18.  |                                                                                                                                                                                                                                                                                                                                               |
| " 11.20 " " N. E. "            | " " 29.14.  |                                                                                                                                                                                                                                                                                                                                               |
| " 11.50 " " " " "              | " " 29.07.  | Let go sheet anchor and veered half a shackle.                                                                                                                                                                                                                                                                                                |
| " 12.10 " " " " "              | " " 29.00.  |                                                                                                                                                                                                                                                                                                                                               |
| " 12.38 " " " 9                | " " 28.96.  | Blowing hard force; 9 looking very wild the sky covered with murky clouds almost impervious with rain.                                                                                                                                                                                                                                        |
| " 1.00 P. M. " N. E. by N. "   | " " 28.88.  | Blowing hard force 9.                                                                                                                                                                                                                                                                                                                         |
| " 1.50 " " E. N. E. "          | " " 28.76.  | Moderated suddenly, scarcely any wind, almost a Calm, looking finer. The country completely inundated; nothing to be seen but the houses and the trees standing out of the water: as it was low-water here to-day about 12-35, this enormous rise must have been forced up against the ebb, and is now at least 20 feet above low-water mark! |
| " 2.6 P. M. E. S. E. moderate. | 28.76.      | Wind came round to E. S. E. with sunshine and showers; country completely inundated.                                                                                                                                                                                                                                                          |
| " 2.20 " E. N. E. "            | 28.76.      | Very little wind; light breeze, no rain.                                                                                                                                                                                                                                                                                                      |
| " 2.40 " S. S. W. "            | 28.76.      | Very light airs.                                                                                                                                                                                                                                                                                                                              |
| " 3. 6 " S. S. W. "            | 28.76.      | Wind S. S. W., beginning to blow in puffs, no rain, looking very wild; Bar. having been stationary some time seems inclined to rise.                                                                                                                                                                                                          |
| " 3.13 " S. W by S. 7 Q.       | 28.76.      | Blowing hard in puffs.                                                                                                                                                                                                                                                                                                                        |
| " 3.17 " S. S. W. 8 to 9       | 28.83.      | Blowing hard in gusts and squalls, Bar. rising rapidly; looking very wild.                                                                                                                                                                                                                                                                    |
| " 3.22 " S. S. W. "            | 28.86.      | Bar. rising rapidly. Blowing hard in puffs, the tide falling very fast, although the stream of flood is running up strong, the wind from its present quarter forces it out of this river; high water this evening at 6-30 P. M.                                                                                                               |

|                   |                        |        |        |                                                                                                                                                                                                                   |
|-------------------|------------------------|--------|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| „ 3.41 „          | S. S. W.               | „      | 28.91. | Blowing hard about force 9, in squalls. Tide falling fast, the wind since it shifted to the southward forcing it out of the river against the flood, as fast as the wind before had forced it up against the ebb. |
| „ 4. 5 „          | S. W. by S.            | „      | 28.99. | Blows harder in the puffs, but moderates more than it did (and for a longer period) between them, looking wild; water falling.                                                                                    |
| „ 4.19 „          | S. S. W.               | „      | 29.04. | Gusts less frequent with long lulls between them, when it is almost calm, sun just now shining out, weather gloomy and murky; scud flying rapidly from S. S. W.                                                   |
| „ 4.34 „          | S. S. W.               | „      | 29.07. |                                                                                                                                                                                                                   |
| „ 5.14 „          | S. S. W.               | 5 to 6 | 29.13. | Blowing fresh in puffs.                                                                                                                                                                                           |
| „ 5.35 „          | S. S. W.               | „      | 29.17. | Blowing moderately fresh, but the same dark murky and almost impervious clouds, lighted here and there a little by the sun behind them, raining fast, becoming calm between the puffs.                            |
| „ 6.00 „          | S. S. W.               | Bar.   | 29.22. | Blowing fresh; about 5 force; cloudy with rain.                                                                                                                                                                   |
| „ 6.20 „          | S. S. W.               | „      | 29.26. | Moderating to 4 force, with steady rain.                                                                                                                                                                          |
| „ 6.40 „          | „                      | „      | 29.29. | Dark and gloomy with fresh gusts and very heavy rain.                                                                                                                                                             |
| „ 7. 6 „          | „                      | „      | 29.32. | Long intervals of little wind between the squalls, but they appear to increase in strength to 7; wind backed to south, looking very dirty with rain.                                                              |
| „ 7.10 „          | South                  | „      | „      |                                                                                                                                                                                                                   |
| „ 7.17 „          | South                  | „      | 29.34. |                                                                                                                                                                                                                   |
| „ 7.32 „          | South                  | „      | 29.35. |                                                                                                                                                                                                                   |
| „ 7.40 „          | South                  | „      | 29.37. |                                                                                                                                                                                                                   |
| „ 8.00 „          | S. by E.               | „      | 29.40. | Blowing hard (still) at times.                                                                                                                                                                                    |
| „ 8.22 „          | S. S. E.               | „      | 29.49. | Blowing hard at times.                                                                                                                                                                                            |
| „ 10. „           | S. E. (G Q. P. 6 to 7) |        |        |                                                                                                                                                                                                                   |
| „ 12. „           | S. E.                  | 6 to 7 | 29.57. |                                                                                                                                                                                                                   |
| „ 21st at 6 A. M. | S. E. 3 B. C.          |        | 29.74. |                                                                                                                                                                                                                   |
| „ „ at Noon       | S. S. E. 5 B. C.       |        | 29.70. |                                                                                                                                                                                                                   |

High water at Shanghae on 20th, 6.30 P. M.

Ditto ditto at Woosung ditto 4.51 ditto.

During the swell of the tide, at the usual time of low-water, the tide was at least 20 feet above low-water mark.

From all I can learn, the mean of the lowest range of the whole of the merchant Ships' Barometers (at Woosung and this place) was 28.63, the lowest I hear of was 28.30 on board ship, and 28.10 on shore, and the Sympiesometer on board ship 27.55. Our's stood more than one tenth higher than the mean, but it has always been taken care of, and has during  $2\frac{1}{2}$  years' service, (in passages from England to Bahia, thence to Cape of Good Hope, and Mauritius, from thence to Hobart Town, and New Zealand and China,) never failed to give us timely warning in every respect, and we consider it a good one.

The only intelligence which has reached us yet, is that it was severely felt at Chusan and also at Ningpo, at the former place causing, through a tremendous inundation, the loss of many lives and much property; and that the country inland from this, has been deluged as far as Nanking, and no doubt the whole extent of the Yangtze river; at Woosung several ships lost, (through several large junks driving foul of them,) masts, bowsprits, anchors, and boats, and several junks were driven on shore.

The land about Chusan is bold and very high, and likewise all the Islands forming that group and archipelago, and also the entrance to the Ningpo river: the land hereabout, (with the exception of the Saddle Group in  $30^{\circ} 50' N. 122^{\circ} 4' E.$  which lies off the entrance of the Yangtze Kiang, is all a low flat for a great extent inland, there being only a few solitary hills between this and Nanking.

Commander Hay's notes at Amoy are as follows, and when we recollect that Amoy is about 440 miles S. S. W. from Shanghae, we shall see that the Cyclone, coming up from the S. Eastward, was nearer to Amoy at 8 A. M. on the 20th, than when its centre reached Shanghae at 2 P. M. on that day.

"On 17th July an unusual fall took place in the Barometer, which reached its lowest point at 8 A. M. on the 20th July, without any bad weather. On that day the heat was very great, with clear weather; I ascended Nantai Washan hill, 1728 feet high, a haze to seaward prevented an extended view, but the sea was not much agitated. On the 21st the wind was strong and steady from N. E. Heavy banks of clouds rose over the land from the W. S. W. to W. N. W. and about sunset an extraordinary broom-like indigo-coloured cloud shot up behind them to an angle of about  $35^{\circ}$  from the zenith. To seaward a thick haze and apparently strong breeze.

22nd July, a heavy swell rolled into the harbour, and at sunset lightning to the S. W. over the land. At 8 P. M. a strong breeze from E. N. E. veering to the Northward, and to seaward heavy looking clouds, with incessant lightning E. by S. Lightning gradually drawing to the Northward; 11 P. M. lightning E. N. E. wind Northerly, 23rd at 8 A. M. wind blowing fresh at West, having come round gradually by the North during the night, and at 10 W. S. W. until 25th; much rain and variable winds, but on the 24th Southerly breezes obtained as before. On the morning of 23rd a dismasted junk came in, and the *Zephyr* Schooner having been at Namoa with a very low Barometer supposed bad weather must have occurred. The harbour of Amoy is seldom visited by typhoons, i. e. violent Cyclones, but there can be no doubt that their outer edge may occasionally graze this place.

Table of Barometer, Wind and Weather at Amoy, by Commander Hay.

| Barometer. |       |       | Thermo-<br>meter. |    | Wind Direc-<br>tion. |    | Force Weather. |             | Wind Direc-<br>tion. |        | Force Weather.       |            | P. M.<br>Weather. | Remarks.                   |
|------------|-------|-------|-------------------|----|----------------------|----|----------------|-------------|----------------------|--------|----------------------|------------|-------------------|----------------------------|
| A.         | M.    | P.    | A.                | M. | A.                   | M. | 1-0-1          | b. c. m.    | S. E. ly—calm        | 3-2-0  | b. c. v.             | Cwt. b. c. |                   |                            |
| 5          | 11    | 5     | 11                | 5  | S. W.                | 11 | 0-1-2          | b. c.       | S. E. S. W. calm     | 3-1-0  | b. c.                |            |                   |                            |
| 29.74      | 29.73 | 29.63 | 83                | 84 | Calm, S. W.          | 84 | 0              | b. c.       | S. E.—calm           | 3-5-0  | b. c. v.             |            |                   |                            |
| 16         | 29.72 | 29.63 | 83                | 84 | Calm                 | 83 | 0-2            | b. c.       | S. E. East           | 3-5    | b. c. q.             |            |                   |                            |
| 19         | 29.55 | 29.55 | 85                | 84 | Calm, S. East        | 84 | 5-3 to 6       | m. c. q.    | N. E. N. E. N. E.    | 5-6-3  | b. c. q. u. b.       |            |                   | Bar.                       |
| 20         | 29.50 | 29.55 | 85                | 85 | N. E.                | 85 | 4 to 6         | m. c. q.    | N. E. N. E. N. E.    | 5-6-3  | b. c. q. u. b.       |            |                   | 8 A. M.—29.40              |
| 21         | 29.64 | 29.70 | 86                | 87 | N. N. E. North       | 86 | 3 to 4         | b. c. r.    | W. S. W. S. E.       | 3 to 6 | q. o. m. r. d. o. d. |            |                   |                            |
| 22         | 29.72 | 29.66 | 86                | 87 | W. N. W. West        | 86 | 5-4-3          | o. u. r. o. | S. E. East           | 3      | o. q. p.             |            |                   | P. M. 29.36 low-<br>point. |
| 23         | 29.60 | 29.45 | 83                | 83 | S. East              | 83 | 0-2-4          | q. o. c.    | S. Easterly.         | 2 to 3 | b. c. o. g. o. c. p. |            |                   |                            |
| 24         | 29.50 | 29.51 | 83                | 83 | Calm, S. East        | 82 | 0-1-3          | o. r. c. p. | S. E. Southly        | 4      | b. c. o. q. r.       |            |                   |                            |
| 25         | 29.63 | 29.67 | 82                | 82 | Calm, S. E. East     | 82 |                | c. p.       |                      |        |                      |            |                   |                            |

From Mr. Elliot's note I estimate the main shift at Shanghai to have been, from N. E. when the force of the wind at 12 h. 38' is marked 9, to S. S. W. when it is marked, at 3 h. 17, at between 8 and 9, again; taking the intermediate veering as being but the ineerings at and near the centre. This will give a track from the S. E. b. E. to the N. W. b. W., or it may perhaps have been a little more Northerly, as we see the wind was much at E. N. E., but then supposing it would probably keep a strait course over the low inundated land at the mouth of the Yang sze kiang, where there was nothing to deflect it, it would have veered after passing the ship, whereas it seems to have kept steady at about S. S. W., which inclines me to take the track I have named as not far from the truth.

## PART II.

## CYCLONES OF THE NORTHERN PACIFIC OCEAN.

Our data for the tracks of Cyclones in this part of the world are very few, but they are highly worth recording, as presenting two great points of interest. The first is their conformation to the general laws of progression and rotation for this part of the globe, and the second that of the tendency of the tracks to the Westward of the meridian within the tropics. We might indeed, to these two, add a third consideration, which is, that the day cannot be far distant when by means of steam from the Western coasts of North America this part of the ocean will become both for England and America a high road to China, and whenever this takes place, all knowledge relative to its Cyclones must have high value.

## TRACK V.

*Second Typhoon of the H. C. S. DUKE OF BUCCLEUGH and fleet.*

The *Swift* Sloop of War, Captain Hayward, with a fleet of sixteen ships, of which 13 were the Hon'ble East India Company's China fleet of the season, left Macao Roads on the 15th June 1797, near the height of the S. W. moonson, and took, as usual in those days, when beating down the China Sea was thought an impossibility even for a man of war, the Eastern route by the Pacific Ocean. While yet within the Bashees on the 19th June, the fleet experienced a first severe Typhoon, which separated it into two divisions which remained during the next two Tyfoons, 1st and 8th of July at such a moderate distance from each other (about 300 miles) that we are fortunately enabled to trace the tracks of these Cyclones to some distance and with much certainty.

My documents are first, Logs of the China Ships received from the India House, and next a copy of that part of the preface to Capt. Lynn's Star tables which describes the *Buccleugh's* distress. I have also had the advantage, for the Log of the *Canton*, of comparing it with that of Mr. Adamson, who was her chief officer.

As the fleet was separated into two divisions as above stated, and as the ships of each division were sufficiently near to their commodore to allow us to consider them as single ships, when the mean of their positions and winds are taken. I have, to economise details, put the Logs of the first division into the form of tables.

*Tabular extracts from the Logs of the 1st Division of the H. Co.'s China fleet in its 2nd Typhoon (in the Pacific Ocean) of July 1797, reduced to Civil Time.*

| Date.             | Ship's Name.       | Position at Noon.                 | Average Position<br>of body of the Fleet<br>and average Wind<br>Noon. | Winds and Weather.                                                                                                                 | Bar. & Ther. | Remarks.                                                                                                                       |
|-------------------|--------------------|-----------------------------------|-----------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|--------------|--------------------------------------------------------------------------------------------------------------------------------|
| 1st JULY<br>1797. | Duke of Buccleugh. | Lat. N. Long. E.<br>19° 4' 124.18 |                                                                       | Noon squally N. N.<br>W. p. m. strong gales<br>N. N. W. Midnight<br>about N. W. b. W.                                              | 29.06 84°    | Ship running 8 and 9 knots<br>to the S. E. till midnight,<br>and making preparations for<br>bad weather. Very hard<br>squalls. |
|                   | Taunton Castle.    | No obs.                           |                                                                       | Noon fresh gales and<br>squally N. b. W.; 10<br>p. m. N. W. b. N.; 11,<br>N. W.                                                    |              | Running to the S. E.<br>strong gales and squalls with<br>heavy rain.                                                           |
|                   | Cuthnells.         | 19° 3' 124.40*                    | 19° 10' North,<br>124° 25' East.<br>Noon N. N. W.                     | Noon squally; p. m.<br>wind North, increasing<br>fast; lightning to the S.<br>W. 8 p. m. N. N. W.<br>10. Lightning to the<br>West. | 29.06 84½    | Ship running with the fleet;<br>strong gales threatening sky<br>and high confused sea.                                         |

\* By Lunars.



|                    |                 |                        |                                                                                                                                                                                                  |                                                                                                                                                                                                                    |
|--------------------|-----------------|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Glutton.           | No obs.         | At midnight N. W.      | Noon in 2d reefs; P. m. Wind North; heavy squalls and rain; 5 P. M. N. N. W.; midnight N. W. strong gale.                                                                                        | Running with the fleet; same weather.                                                                                                                                                                              |
| Canton.            | 19° 20'         |                        | N. W. hard squalls, P. M. N. N. W. beginning to blow hard; towards evening increasing and drawing more Westerly; 6 P. M. one flash of lightning and thunder from the N. W.                       | This ship is noted as hull down to the Northward by the Taunton Castle, and as a bad sailer, the fleet being under topsails for her; she was running to the S. E. with the others but marking 7½ to 6¾ knots only. |
| Duke of Buccleugh. | Lat. N. 17° 15' | Long. E. 126° 21'      | At 3 A. M. W. N. W. blowing a hurricane and remained so till noon; P. M. S. W. by W. Excessive heavy gusts to 10 P. M. Wind at S. S. W. when it moderated gradually as it came to the southward. | Alarming heavy sea; hove to at 6 A. M. Lost topmasts, &c. hove to with hammock cloths in the mizen rigging. P. M. lost tiller and all sails blown from the yards. Midnight moderating.                             |
| Taunton Castle.    | Not given       | 17° 38. N. 126° 25. E. | At 2 A. M. W. N. W. hard gales and violent squalls; 7 A. M. S. W. P. M. still very strong but moderating to midnight, when wind about S. S. W.                                                   | Blowing very hard; impossible to look to windward; between 9 and 10 lost topmasts sprung mainmast and foreyard and at 7 A. M. hove to.                                                                             |

2D JULY

## 1st Division. Tabular Extracts Continued.

| Date. | Ship's Name. | Position at Noon. |          | Average position of<br>body of the fleet<br>and average wind. | Winds and Weather.                                                                                                                                                             | Bar. and<br>Ther. |       | Remarks.                                                                                                                                                                                                                                           |
|-------|--------------|-------------------|----------|---------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|       |              | Lat.              | Long.    |                                                               |                                                                                                                                                                                |                   |       |                                                                                                                                                                                                                                                    |
|       | Cuffnells.   | 17° 53'           | 126° 24' |                                                               | 2 A. M. Wind about<br>W. b. S. 2 A. M.<br>broached to, blowing a<br>hurricane; 9 A. M. S. W.<br>b. W.; 11 A. M. S. W.<br>P. M. S. W. b. S. 7 P. M.<br>S. S. W. 11, S. W. b. S. | 28                | 77 78 | Blowing very hard; $\frac{3}{4}$ past 4<br>A. M. lost topmasts, jibboom,<br>foreyard, head of the mizen<br>mast, &c. Noon abating, to<br>midnight.                                                                                                 |
|       | Glatton.     | Not given.        |          |                                                               | Midnight wind N. W.<br>a hurricane, 5 A. M.<br>about S. W. b. W. 9<br>W. b. S. Noon S. W. b.<br>S. to midnight.                                                                |                   |       | Broached to twice; 2 A. M.<br>remained hove to, lost top-<br>masts, &c.<br>P. M. blowing so hard<br>men could not go aloft; mid-<br>night moderating.                                                                                              |
|       | Canton.      | 17° 45'           | 126° 31' |                                                               | 5 A. M. Wind W. N.<br>W. 7 A. M. flew round<br>to W. S. W. hurricane<br>P. M. S. W. 5 P. M.<br>W. S. W. decreasing to<br>midnight and hauling to<br>the South.                 |                   |       | This ship ran on to 8 A.<br>M. or 6 hours after the others<br>in the shift W. N. W. to W.<br>S. W., was hove round to<br>North and had her decks<br>swept; 11 A. M. main and<br>mizen mast went; Noon lost<br>rudder; 3 feet water in the<br>hold. |

On the 3rd July, the wind was gradually abating from midnight with all the ships, and the wind was hauling to the S. W. b. S. and South with them, according to their positions, which at Noon, when the weather was tolerably fine, were,

|                               |                |            |            |
|-------------------------------|----------------|------------|------------|
| <i>Buccleugh</i> , .....      | Lat. 17°26' N. | Long. .... | 126°49' E. |
| <i>Taunton Castle</i> , ..... | 17°17' ...     | .....      | Not given. |
| <i>Cuffnells</i> , .....      | 18°19' ..      | .....      | 127°05' .. |
| <i>Glatton</i> , .....        | Not given,     | .....      | ..         |
| <i>Canton</i> , .....         | 17°46' ..      | .....      | 126°30' .. |

The whole of these ships, as will be noted, were now more or less in a disabled condition from broaching to when scudding to the S. E. across the South Western quadrant of the Cyclone, and we have seen that the *Canton*, which ran on to 8 A. M. had a partial shift, and her decks swept in consequence, and lost her rudder shortly after.

It was in this Cyclone, and doubtless between midnight and 8 A. M. that H. M. Sloop of war *Swift*, Capt. Hayward, with nearly 400 souls on board\* foundered! She was the Commodore, and had separated with this division of the fleet from the main body, and was scudding with them to the S. E., her top-light being last seen by the *Duke of Buccleugh* at midnight 1st,—2nd, and by the *Taunton Castle* at 1 A. M. on the 2nd, bearing S. b. W. from her. As Commodore she had no doubt up to that time, though at much risk, kept under such sail (or probably bare poles) as would enable her, with her superior sailing to the heavy Indiamen, to keep company, but as from that time forward the Cyclone was increasing in severity as the ships were nearing the centre, and the centre crossing near them, she must, to avoid being pooped, have carried any sail she could bear, and thus have run close in upon the centre before it crossed her track, or she may have seen the signals made by the Indiamen† when they broached or hove to and have broached to also, or been swamped or blown over in attempting to heave to herself. It is worth remarking that the partial shift of the wind with the *Canton* (W. N. W. to W. S. W.) is exactly an incurving of the wind such as I have elsewhere shewn‡ takes place close upon the centres of Cyclones. The *Swift* no doubt was ahead of the *Canton* the worst sailer in the fleet.

\* She had on board, besides her own complement, the officers and crew of H. M. S. *Providence* wrecked a short time previous on Typinshan.

† Signal to heave to is recorded in most of the Logs when they did so.

‡ Journal, Vol. XIV. p. 732, and Sailor's Horn Book.

I shall now give a brief summary of the Logs of the second division of the fleet, the body of which was on the 2nd at noon about 300 miles distant from the first division, but I do not give them in tables, for there are not sufficient differences to render this worth while ; I note merely any remarkable circumstance. This second division consisted of ten ships, of which the logs of seven, viz. the H. C. Ships *Thames*, *Royal Charlotte*, *Alfred*, *Woodford*, *Henry Addington*, *Carnatic* and *True Briton*,\* are, by the attention of the Hon'ble the Court of Directors, as before acknowledged, before me ; and I have very carefully compared them so as to detect any discrepancies or any particular notes which may appear in those which are the fullest and most attentively kept, and in this respect I must remark that we shall be specially indebted to the able log of Capt. W. Stanley Clarke of the *True Briton*, which is the model of them, and which while it affords us perhaps the earliest instance on record of a careful registry of the Barometer, gives us also in this case, through that care, the means of connecting to a great degree of accuracy the Cyclone of this division of the fleet with that of the first division, by measuring the distance of the centre by the rate of fall, in addition to the other evidence derived from the positions of the ships and the wind. At the distance of more than half a century it is not unpleasing to find that the principles of a new application of this valuable instrument are here available to aid us in researches of great interest, in a tract of ocean where our new science has been so little applied.

*Summary of the Logs of the Hon'ble Company's Ships THAMES, ROYAL CHARLOTTE, ALFRED, WOODFORD, HENRY ADDINGTON, CARNATIC and TRUE BRITON, forming the second division of the China fleet of July 1797.—Civil Time.*

On the 1st July, 1797, the fleet had the Botel Tobago Xima Islands bearing N. 18° East to N. 5' W. in 21° 47' N. ; with light N. E. breezes and fair weather. The *True Briton's* Barometer, 29.63, Ther. 86½ at 6 P. M. by the bearing from the Commodore (the *Henry Addington*, Capt. Farquharson,) the fleet was in Lat. 21° 45' N. ; Long. 122° 5' East ; steering to the S. Eastward 5½ and 6 knots with the wind variable from N. b. E. to N. E. b. N., from 8 P. M. variable N. E. to North, an increasing breeze ; 2nd reefs taken in ; midnight wind

\* There were some Botany Bay ships (as traders to New South Wales were then called,) and others with the fleet.

about North, blowing strong, with squalls and lightning to the S. E., a confused swell since 4 P. M. The fleet at midnight was by acct. in Lat.  $21^{\circ} 21' N.$ ; Long.  $122^{\circ} 38' East.$

2nd July.—Midnight to Noon increasing to a strong gale with hard squalls; every preparation making for bad weather. At 8 A. M., wind N. b. W., to N. N. W. Noon N. b. W.; Lat.  $20^{\circ} 20' N.$ ; Long.  $123^{\circ} 20'$ ; the fleet hove to at  $4\frac{1}{2}$  P. M. in Lat.  $19^{\circ} 49'$ ; N. Long.  $123. 33.$ ; P. M. wind N. N. W. 5 P. M. N. W.; 7 W. N. W. and W. b. N., and at midnight W. S. W. at  $4\frac{1}{2}$  P. M. fleet hove to by signal, being then in Long. E.; 11 P. M. *Henry Addington* lost her rudder, midnight blowing very heavy.

At 3 A. M. The *True Briton's* Barometer sunk 2-10ths of an inch. It is not said if *all at once*, or if this is the amount of fall since Noon of the 1st. It is further said that "at Noon (2nd) it is down at 29. 3, but it is marked at the foot of the log 29.5, and at 9 P. M. at 29.3, so that I presume 29.5 to have been an error of the copyists, and that it really was at 29.3 at Noon and 29.43 at 3 A. M., or 2-10ths below Noon of the 1st. At midnight the Barometer is marked at 29.2. I shall refer again to this Barometer register in deducing the track of this Cyclone.

3rd July.—A. M. wind veering from W. S. W., to S. S. W.; at 9 A. M. and Noon, when Lat.  $20^{\circ} 5\frac{1}{2}' N.$ ; Long.  $123^{\circ} 46' East.$  P. M. wind S. b. W. at sunset and South at midnight, blowing very heavy to 4 P. M. when it moderated to midnight, after which the weather became fine.

### Remarks.

I commence these with the range of Capt. W. Stanley Clarke's Barometer in the *True Briton*, to which I have before adverted. It was at Noon 1st July, 29 63. Ther.  $86\frac{1}{2}^{\circ}$ .

|                                                     |        |
|-----------------------------------------------------|--------|
| 3 A. M. 2nd July, had fallen 0. 2., therefore,..... | 29.43. |
| Noon, .....                                         | 29.30. |
| 9 P. M.,.....                                       | 29.30. |
| Midnight, .....                                     | 29.20. |
| 3rd July, 3 A. M., .....                            | 29.10. |
| 8 A. M., .....                                      | 29.15. |
| 11 A. M., .....                                     | 29.20. |
| Noon, .....                                         | 29.30. |

Capt. Clarke adds :

"In the other column I have noted the fall *and* rise\* of the Marine Barometer, which proved a very true index of the weather, for between 3 and 4 o'clock

\* Shewing how new its application was at this time as a warning to seamen of the approach of tempests.

the gale was at its highest and it would be difficult to conceive a more furious one while it lasted; the Marine Barometer being rather below 29.1 at that time, which was its greatest fall; towards Noon the squalls slackened, though we had hard rain and very thick weather."

We have first to consider if the Cyclones of the first and second divisions of the Fleet were one and the same, and for this we must first consider their distance apart.

It appears that the 1st Division was on the 1st of July at Noon in the Western edge of its Cyclone, the wind (North to N. N. W.) in Lat.  $19^{\circ} 10'$  North;  $124^{\circ} 25'$  East', running to the S. Eastward till midnight the wind increasing in strength and being then at S. W. The position of the Division at this time was about  $18^{\circ} 03'$  N.; Long.  $125^{\circ} 15'$  E.; and at the same time, midnight, 1st and 2nd, we find that the 2nd Division was in Lat.  $21^{\circ} 21'$ ; Long.  $122^{\circ} 38'$ , or at a bearing and distance of N.  $37'$  W.; 250 miles from the 1st, with its Cyclone just commencing at North.

As the first Division had the wind at this time N. W., and was close upon the centre, we may say that the centre of their Cyclone was in about  $18^{\circ} 20'$ , N.  $125^{\circ} 30'$ , E. or thereabouts, which will give the bearing and distance between the Cyclone and the body of the 2nd Division as S.  $42^{\circ}$  East about 244 miles, which we may take as being about the semi-diameter of the Cyclone, making its diameter to be 488 miles, which, for a Pacific Ocean one, is not at all excessive.

If we look now at Captain Stanley Clarke's Barometer register, we find that between Noon and 3 A. M. it is noted to have fallen 2-tenths, which for the whole 15 hours would give a fall of 0.13 per hour, but it is evident that this fall must at least have taken place after sunset, since nothing is said about a falling Barometer at that time, when the first recfs were taken in. Hence we may fairly assume that it was a fall of at least 0.02 per hour,\* which would give an approximate distance of say 250 miles at midnight.

Now it appears from the logs of the second Division that the Cyclone was, as we have seen, bearing at midnight about S.  $42^{\circ}$  East 244 miles

\* In the next Cyclone in the Log of the *Buccleugh* of the 8th the Barometer is marked at Noon of the 7th at 29.27 and at Noon of the 8th, 28.55, and the remarks say:—"The barometer fell very fast towards Noon." We should evidently take an unfair average here if we assumed the fall to represent that of the 24 hours, when it probably took place in 12, or even in six hours.



from thence, and that they ran down to meet it to the S.  $40^{\circ}$  E. 112 miles, till they hove to at  $5\frac{1}{2}$  P. M., and that by the wind and the Barometer the centre was nearest to them at about 3 A. M. on the 3rd.

Hence, if from the 250 miles of distance we subtract this 122 miles of run there will remain 128 miles as the distance made by the Cyclone from midnight to 3 A. M., or in 27 hours, which will give an average of 4.8 miles per hour for its rate of travelling, which though slow is not an improbable one, for the Cyclone lasted nearly two days with both Divisions, and both ran across a part of it before heaving to.

It would seem that there is no sort of doubt that the two Divisions of the fleet experienced the same Cyclone, and as the Cyclone's centre bore from the 2nd division S.  $42^{\circ}$  East at midnight, and yet though that division made 94 miles of Southing in its run before heaving to it passed close to the Northward of it, we may take its track to have been about from S.  $40^{\circ}$  East to N.  $40^{\circ}$  West, and we may certainly mark its course on that track to have been upwards of 500 miles, since we have seen that its diameter alone could not have been much under that extent.

#### TRACK W.

*Third Tyfoon of the H. C. S. DUKE OF BUCCLEUGH and Fleet, 8th and 9th July, 1797.*

The fleet, as before described, remained separated into two divisions, which were about  $3\frac{1}{2}$  degrees apart, and indeed the second or sternmost division were so scattered that the more distant ships almost formed a third division, but I still continue to distinguish them as the first and second divisions, noting carefully, how the more Northerly ships escaped the Cyclone, of which the centre passed over the first or South East division, and was severely felt by the southernmost ships of the second division.

The first division were near enough together to allow us to consider them as one fleet, and take the centre of its position as that from which to calculate. This division consisted of the H. C. S. *Cuffnells*, *Duke of Buccleugh*, and *Taunton Castle*; the *Glatton* with the *Canton* in tow (which ship had lost her rudder and was dismasted) having separated from the fleet, and being  $2\frac{1}{2}$  to  $3^{\circ}$  to the Northward, did not feel this Cyclone except as a fresh breeze from the S. E. with a long swell from the South.

*Abstract summary of the Logs of the 1st Division, 7th July 1797.*—Noon, Lat.  $17^{\circ}21'$  N.; Long. Chr.  $126^{\circ}20'$  East; Bar. 29.27; Ther. 80, Wind N. E. by N. Confused swell and suspicious weather, moderate breeze, increasing p. m. to a hurricane at N. N. E. and N. b. E.; at midnight with a mountainous sea; under trysails and bare poles; 8 p. m. Bar. had fallen to 29.24. In the remarks I shall quote from the *Buccleugh's* Log is an instance of the Red Sky.

8th July, A. M. Wind N. E. b. E. Dark threatening weather and increasing gale with two ships; with *Buccleugh*, N. N. W., blowing a hurricane with hard varying gusts; \* Noon centre of the three ships which were at least 18 or 20 miles apart in Lat.  $17^{\circ}6'$ ; Long. 126.9; Bar. of *Cuffnells* and *Buccleugh*, 28.55. Ther.  $79^{\circ}$ ; 0.30 p. m. *Buccleugh's* Bar. sunk with the calm to 28.40. At 0.30 p. m. a calm, after which at about  $2\frac{1}{4}$  p. m. a shift of wind as follows:

*Cuffnells* N. E. to W. b. N. veering to S. S. E. at 5 p. m.

*Buccleugh* N. N. W. to S. S. W.

*Taunton Castle* N. b. W. S. S. W.

Blowing a hurricane again and hauling to southward towards midnight, with a confused sea; 9 p. m. Lightning in the S. E. Of the shift *Taunton Castle* says:—

“A little after noon the wind suddenly died away and the sea much down, but it was the shortest interval of moderate weather I ever knew after a hard gale, for in two hours, i. e. at 2 p. m. there came on such a violent storm that the oldest seamen on board said they never knew it blow so hard before.”

9th July.—From midnight decreasing somewhat to strong gales S. E. Noon Lat.  $17^{\circ}26'$  N.; Long.  $125^{\circ}5'$ . Bar. 29.08; Ther. 79; p. m. to midnight decreasing always from S. S. E. after which fine weather and Northerly wind, this division was hove to throughout this Cyclone, the *Buccleugh* having lost her rudder.

### *Abstract summary of the Logs of the 2nd Division.*

This Division consisted as before, of the ten East Indiamen and some Botany Bay ships, and from the last Cyclone had had moderate weather till on the 8th July, 1797, at Noon, when in  $18^{\circ}38'$  N.; Long.  $125^{\circ}33'$  East; the breeze which had been preceded by a swell from the S. E. and S. S. E. increased from the E. N. E. to a fresh gale E. b. N. with a high confused sea. The *True Briton's* Bar. which on the 7th at Noon was at 29.80, had fallen to 29.62; Ther.  $85^{\circ}$ ; and at 2 p. m., the fleet hove to till midnight.

9th July.—A. M. wind veering slowly to E. S. E. and by Noon to S. E. Fleet lying to with strong gale and high sea. At Noon Lat.  $18^{\circ}52'$ ; Long.  $125^{\circ}8'$  E.; *True Briton's* Barometer 29.40. At midnight wind was still about S. E. b. S.

\* Owing no doubt to the incurring of the wind close on the centre; and the difference of winds is what should occur with scattered ships but just in sight of each other at most.

10th July.—Moderating from the S. E. to noon, when in Lat.  $19^{\circ} 17' N.$ ; Long.  $124^{\circ} 40'$ . The *True Briton's* Bar. 29.50; Ther. 85.

## REMARKS.

We have now, from the position of the two divisions, first to settle, as before, that they successively had the same Cyclone, and then to ascertain its track.

We find that the first Division, on the 7th July at Noon, when in Lat.  $17^{\circ} 21'$  Long.  $126^{\circ} 20'$  had the wind at N. E. b. N. a moderate breeze increasing at midnight to a hurricane at N. N. E., and on this day at Noon the bearing and distance of the second division from it was N.  $25^{\circ} W.$  157 miles. At midnight 7th,—8th, the second division had stood on about 30 miles to the S. Eastward, so as to make its distance at this time about 130 miles from the first division, which was lying to. The breeze was freshening at midnight with flying squalls and rain and a heavy sea, and the ships were reefing and (warned by the preceding Typhoon) striking topgallant yards and masts. We may take it then, that they were not far from the outer verge of the Cyclone, which at this time bore about S. E. from them (wind N. E). It should be noticed that they continued to stand to the S. E. about 30 or 40 miles more before heaving to. At noon of the 8th, the first division had it blowing a hurricane, and they had their calm centre and subsequent shift of wind at about 0.30 P. M. We may thus take the position given for the fleet to have been also that of the centre, and it was in  $17^{\circ} 6' N.$ ;  $126^{\circ} 9' E.$  At this time the 2nd Division bore from it N.  $21^{\circ} West$  99 miles by its position, and had the wind at between E. b. N. and E. N. E. increasing so rapidly that at  $2\frac{1}{2}$  P. M. they hove to. The *True Briton's* Barometer had fallen 0.18, but as it is only registered from Noon to Noon we cannot base any calculation upon it. If we take the true average of the wind to have been E. b. N.  $\frac{1}{2}$  N. this will give us the centre of the Cyclone as bearing S. b. E.  $\frac{1}{2}$  E. ( $S. 16^{\circ} E.$ ) and we have seen that by the estimated position of the two divisions (and that of the first division was of course merely an estimate and nothing more,) it bore S.  $21^{\circ} E.$  and if we take the distance to be 100 miles, the Cyclone was one of 200 miles only in diameter.

There can be no sort of doubt then that the two divisions experienced again the same Cyclone, which passed over the first division, and to the Southward of the second. Its track we may best deduce from the

shifts experienced by the first division, remembering that they were in different parts of the central calm space, from 15 to 20 miles or more in diameter, since the calm lasted about two hours.

We have then the different ships as follows, viz.

|                         |            |                                                                                                                                                                    |                                                                                                           |
|-------------------------|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|
|                         | Wind at    | $\left\{ \begin{array}{l} \text{Shifted at about 2} \\ \text{P. M. after a lull} \\ \text{to W. b. N. veering} \\ \text{rapidly to S. S. E.} \end{array} \right\}$ | $\left. \begin{array}{l} \text{Shewing a} \\ \text{track to the} \\ \text{W. b. N.} \end{array} \right\}$ |
| Ship <i>Cuffnells</i> , | Noon N. E. |                                                                                                                                                                    |                                                                                                           |
| <i>Buccleugh</i> ,      | North      | S. W.                                                                                                                                                              | W. N. W.                                                                                                  |
| <i>Taunton Castle</i> , | N. N. E.   | S. S. W.                                                                                                                                                           | W. N. W.                                                                                                  |

which will give a track of about N.  $71^{\circ} 15'$  West, but as we find that the wind veered with the second division but slowly to the E. S. E. and S. E. we may allow the track to have been a little more to the Northward, and I estimate it to have been really about N.  $65^{\circ}$  W.

In the Log of the *Buccleugh* occurs a remarkable notice of the curious phenomenon, the red sky, which is evidently here, as in the China Sea and in the Southern Indian Ocean, a precursory sign of the Cyclones.\* The passage occurs in Mr. Lynn's notes, as follows:—

“At sunset the clouds predicted another severe tyfoon; the appearance was that of remarkably large and dense clouds surrounding the horizon at an altitude of about 10 to 15 degrees, having their edges tinged with a deep crimson border, or if bound with a ribbon of that colour, and reflecting an awful redness on the sails, which appearance had also preceded the former gales, and which I shall ever conceive are certain indications of their approach; made every thing as snug as possible before night.”

#### TRACK X.

The *Buccleugh* experienced a fourth Tyfoon, from the 16th to the 18th of July, which is entered as follows in Mr. Lynn's remarks:—

“On the 16th at Noon the *Cuffnells* made signal that the Bar. was again falling; immediately prepared for another tyfoon, which commencing in the N. N. E. and veering in the same way exactly as the former ones to North N. N. W., N. W. and West, from thence to W. S., W. S. W. and South, when after two days' continuance of severe blowing it moderated. And we then observed in Lat.  $17^{\circ} 16'$  North; Long.  $128^{\circ} 14'$  East.”

\* While writing this I learn also that it is so too for the Bay of Bengal, and moreover, that it has occurred in two instances (Cyclone of October 1848, with the ship *Barham*, and Cyclone of Oct. 1832 with the ship *Albion*) at night by moonlight!

This average of N. N. E. to South would, without allowance for the *Buccleugh's* drift, give a track to the W. b. N. I have no further logs of the other ships from which to ascertain if it reached them, and I have marked the track W. N. W. on account of the drift and as passing to the Northward and Eastward of the *Buccleugh's* position on the 18th, as it evidently did.

#### TRACKS Y AND Z.

*William IV.'s Tyfoons, July, 1845. Pacific Ocean and China Sea.*

The following newspaper notice is all I have met with on the subject of these Cyclones, which though of 1845, I have placed last as from the scantiness of the notice I cannot conveniently divide it, and the first Cyclone is a Pacific Ocean one, and the second very nearly so. We are enabled to mark pretty exactly the track of the first Cyclone, though as we do not know the vessel's rate of sailing, there is some uncertainty about its latitude. The second of them might almost be taken for a heavy monsoon, but the great fall of the Barometer and the excessive violence of the wind induce us to suppose that it was a true Cyclone, the ship being in its S. Eastern quadrant.

#### SINGAPORE.

*Calcutta Englishman, 1st Oct. 1845.*

“We have been favoured by a friend with the perusal of a letter, from which we learn the following particulars respecting the damage received by the *William IV.*

On the 7th July 1845, the weather became threatening, and the Barometer fell considerably. They were then in Lat. 19.40. N., Long. 123. 10. E. A strong gale with heavy rain set in from the N. E. round to the N. W., and blowing in heavy gusts. The Barometer continued to fall to 28. 50. and preparations were made for a typhoon. At 10. a. m. the wind blew with such fury that it was impossible to stand on the deck without support, the sea blowing over the ship like a sheet of snow. In an hour the Barometer fell to 28.30. and during the day was as low as 28.20. At 11 the rudder head broke off and the ship broached to, carrying away the topmasts, jib-boom, fore-yard, starboard bulwarks, and quarter and stern boats. Fortunately no water was shipped on the weather side. Such was the force of the wind that the larboard quarter boat was blown to pieces. At 3 a. m. on the 8th, wind veered to S. S. W. and the mercury began to rise, but the fury of the typhoon did not cease until 4.30 a. m. At daylight the wind was S. S. E. and still violent. The larboard main chains were found nearly all broken.



At noon the gale moderated a little, but an awful sea was still running. The mainmast was however secured, and a small sail set on the stump of the main topmast. On the 9th there was a fresh gale from the S. E. but less sea, and the mercury rose to 29.10. They then steered for Hongkong to repair damages, but when about 350 miles distant, on the 11th, it commenced blowing a strong gale from S. S. E., which increased in violence veering to S. W., until 11 A. M., when it blew a perfect hurricane. The Barometer fell to 28.20; and they were obliged to throw the guns overboard, and cut away the mainmast, all the preventer tackles and shrouds being carried away, and from the motion of the vessel it was tearing up the deck and starting the beams. About two hours after, a heavy sea fell on board, which swept away all the larboard bulwarks from the fore channel to the gangway, leaving the foremast almost destitute of support. During the night of the 11th and morning of the 12th, their situation was extremely perilous, and at daybreak, they discovered they were not more than 4 miles from the breakers on the mainland of Formosa, a strong gale blowing from the S. S. W., and a mountainous sea running. All morning it had been blowing in severe squalls and thick rain, but cleared up for about half an hour enabling them to see their danger, when the rain again set in so close that they could scarcely see a cable's length. They were able to set a foresail and keep the ship off, and at 5 P. M., reached Lamyet. During the whole of the 12th a heavy gale blew from the S. S. W., and on the 13th there were continued gales with a high turbulent sea and constant rain. This night they lay to, to avoid being driven on the Pescadores. It cleared up at daylight of the 14th and the Eastern Islands were discovered. It again blew furiously with heavy squalls, and two of the jury sails were blown away. On the 15th there was a fresh gale from S. S. E. with a heavy sea, but a jury mainsail was got up which enabled them to make a better course, and Amoy was reached at 4 P. M. on the 16th. Five days had passed without their being able to cook any thing, and for nearly nine days they had not a dry suit of clothes to put on."—*Singapore Free Press*, Sept. 11th, 1845.

Considering the first of these Cyclones, we are a little embarrassed by the Lat. and Long. being given first, and its not being stated whether this is the estimated position when it began to blow heavily from the N. E., or that at noon which has been merely put down first? Taking the whole of the context however I incline to believe that, as it is said "they were *then* in Lat. &c." and that at 11 "she broached to," it is intended to express here that this position was that of about daylight, when the fall of the Barometer commenced, or say at 6 A. M., from which time, if we allow her to have run on her direct course (for she was I take it bound to England by the Eastern passage, since she ran



with the wind at N. E. till she plunged into the Cyclone, at N. W. (and indeed she could not heave to with Cape Engano only 70 miles under her lee) we may say that from 6 A. M. to noon she made at least 50 miles to the S. East, which would place her at noon in Lat.  $19^{\circ} 5' N.$  ; Long.  $123^{\circ} 37'$  with the wind at N. W. and the centre of the Cyclone consequently a short distance to the N. E. of her, since it veered at or by 3 A. M. to S. S. W. and shortly after to S. S. E. or 14 points in 15 or 16 hours. The average shift then was one of from N. W. to S. S. W. which indicates a track from the E. b. N. to the W. b. S.

In the second Cyclone we have only a vague position given, but the veering, if we allow it on the grounds I have before stated to have been a true Cyclone, is a very remarkable one, for it indicates a nearly meridional track, and one trending to the Eastward, or *from* the S. b. W. to the N. b. E. and I therefore note it here, though I can only mark it on the Chart conjecturally as follows.

If we take the ship to have made the best of her way towards Hong Kong from her last position, by running through the Bashee passage, she may have been on the 11th, say at noon, when 350 miles from Hong Kong, in Lat.  $20^{\circ} 50' N.$  ; Long.  $120^{\circ} 20'$  East, from which position the South point of Formosa lies about N. N. E. 70 miles.

We are at a loss to know if the ship ran any distance, or was only drifted during the whole of the 24 hours from about daylight 11th, to daylight on the 12th, when so near the rocks of Formosa, for any run would make the track of the Cyclone even farther to the Westward of the meridian than we can now venture to assign it, but as she was partly disabled she could scarcely venture to run far in such weather, and the drift she made is not an excessive one in a Cyclone. I have therefore set it down, at a venture, as a track from the S. S. W. to the N. N. E. meaning by this expression that I have no doubt, if the newspaper account be correctly printed\* that the track certainly did incline to the Eastward of the Meridian, but how much so we are uncertain, though from what we have seen it *may* have done so enough to pass to the Eastward of the South point of Formosa !

\* I cannot here, unfortunately, refer to the *Singapore Free Press* of 1845.

The following is a table of the tracks marked on the Chart for more convenient reference.

|                 | Tracks.                                                            | Dates.      |
|-----------------|--------------------------------------------------------------------|-------------|
| <b>A and B.</b> | <i>Golconda and Thetis,</i> .....                                  | Sept. 1840. |
| <b>C.</b>       | <i>Chusan,</i> .....                                               | Sept. 1843. |
| <b>D.</b>       | <i>Tung Hai, Cacique,</i> .....                                    | .....       |
| <b>E.</b>       | <i>Atiet Rohoman and Shah Allum,</i> .....                         | Oct. 1843.  |
| <b>F.</b>       | <i>Manila,</i> .....                                               | Oct. 1843.  |
| <b>G.</b>       | <i>Edmonstone,</i> .....                                           | Nov. 1844.  |
| <b>H I.</b>     | <i>Pacific Ocean and China Sea, H. M. Str. }<br/>Driver, .....</i> | Oct. 1845.  |
| <b>I i.</b>     | <i>Ship Ann, &amp;c., Manila,</i> .....                            | Nov. 1845.  |
| <b>J.</b>       | <i>H. C. Steamer Pluto,</i> .....                                  | June 1846.  |
| <b>K.</b>       | <i>Hydcree,</i> .....                                              | July 1846.  |
| <b>L.</b>       | <i>H. M. S. Ringdove,</i> .....                                    | Sept. 1846. |
| <b>M.</b>       | <i>H. M. S. Agincourt,</i> .....                                   | Sept. 1846. |
| <b>N.</b>       | <i>Mischief,</i> .....                                             | Sept. 1846. |
| <b>O.</b>       | <i>Don Juan,</i> .....                                             | Sept. 1846. |
| <b>P.</b>       | <i>Brig Guess,</i> .....                                           | July 1847.  |
| <b>Q.</b>       | <i>H. M. Steamer Vulture,</i> .....                                | Nov. 1847.  |
| <b>R.</b>       | <i>Rob Roy and Swallow,</i> .....                                  | Nov. 1847.  |
| <b>S.</b>       | <i>Rob Roy, Manila,</i> .....                                      | Nov. 1847.  |
| <b>T.</b>       | <i>Easurain, Coast of Luconia and Bashee Passage,</i> .....        | Nov. 1847.  |
| <b>U.</b>       | <i>H. M. S. Childers, Shanghae,</i> .....                          | July 1848.  |

#### PACIFIC OCEAN.

|             |                                            |              |
|-------------|--------------------------------------------|--------------|
| <b>V.</b>   | <i>Duke of Buccleugh, and fleet,</i> ..... | July 1797.   |
| <b>W.</b>   | <i>Ditto, .....</i> ditto, .....           | ditto ditto. |
| <b>X.</b>   | <i>Ditto, .....</i> ditto, .....           | ditto ditto. |
| <b>Y Z.</b> | <i>King William IV.,</i> .....             | July 1845.   |

PROCEEDINGS  
OF THE  
ASIATIC SOCIETY OF BENGAL  
FOR MARCH, 1849.

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At a Meeting of the Asiatic Society held on Wednesday, the 7th March 1849,

The Right Rev. the LORD BISHOP, Vice President, in the Chair.

The proceedings of the February Meeting were read and confirmed, and the accounts and vouchers of the preceding month were laid upon the table.

The following gentlemen, proposed as members at the previous meeting, were ballotted for and duly elected.

*W. J. H. Money*, Esq. C. S.

*Capt. Bazely*, Bengal Artillery.

Read letters—

From Captain J. D. Cunningham, Political Agent, Bhopal, forwarding facsimiles of inscriptions from Oodeypore and Rahutgurh, on the Beena river.

From Charles Huffnagle, Esq. American Consul, forwarding a box of shells and a parcel of books presented to the Society by Henry Wheatland, Esq., Secretary to the Essex Institute, Massachusetts.

Read a letter accompanying these donations, in which Mr. Wheatland proposes correspondence and the exchange of objects of Natural History with the Asiatic Society. Referred to the Section of Natural History.

From Captain James Abbott, a note on certain remains of Greek Sculpture found at Potowar.

From Major Boileau, giving a sketch of a small fish that had been swallowed by a snake, and a drawing of the snake's head.

From Dr. Roer, Secretary Oriental Section, requesting the sanction of the Society to a proposal by Dr. Sprenger to publish a small pamphlet in Arabic on Shiite bibliography in the Bibliotheca. Sanctioned.

From Dr. Theodore Cantor, forwarding some remarks upon the Rev. Mr. Mason's Catalogue of Tenasserim land shells, by W. H. Benson, Esq., C. S.

Mr. Laidlay submitted a transcript of a Bactrian edition of the Edicts of Asoka copied by Captain Alexander Cunningham from a rock in the Yusufzye country. At the same time a letter from Capt. Kittoe was read enclosing a fragment of another inscription by the same Prince, but in the lát character, found by him at Sasseram.

A suggestion having been made that the Society should purchase a certain number of copies of Capt. Latter's Burmese Grammar, for presentation to the learned Societies and individuals with whom the Asiatic Society are in correspondence, it was resolved that the matter be referred for consideration and report to the Oriental Section.

On His Lordship the Vice President retiring, the Chair was taken by Dr. Lamb, when the Curators submitted their Reports.

J. W. COLVILE, *President*.

J. W. LAIDLAY, *Secretary*.

#### LIBRARY.

The following books have been received since the last meeting.

#### *Presented.*

Archæologia: or Miscellaneous Tracts relating to Antiquity, published by the Society of Antiquaries of London. Vol. XXXII. 4to.—BY THE SOCIETY.

Upadesaka, No. 27.—BY THE EDITOR.

Oriental Baptist No. 27.—BY THE EDITOR.

The Calcutta Christian Observer for March, 1849.—BY THE EDITORS.

A Report on the Insects of Massachusetts, injurious to vegetation. Cambridge: 1841. 8vo.—BY THE LEGISLATURE OF MASSACHUSETTS.

Reports on the Fishes, Reptiles, and Birds of Massachusetts. Boston, 1839, 8vo.—BY THE SAME.

Report on the Invertebrata of Massachusetts, comprising the Mollusca, Crustacea, Annelida, and Radiata. Cambridge: 1841. 8vo.—BY THE SAME.

Reports on the Herbaceous Plants and on the Quadrupeds of Massachusetts. Cambridge: 1840. 8vo.—BY THE SAME.

Tatwabodhini Patriká, No. 67.—BY THE TATWABODHINI SABHA.

Journal of the Indian Archipelago. Vol. III. No. 1.—BY THE EDITOR.

Ditto, ditto (2 copies.)—BY THE GOVERNMENT OF BENGAL.

Memoir, Geographical, Political, and Commercial, on the present state, productive resources, and capabilities of commerce, of Siberia, Manchuria, and the Asiatic Islands of the Northern Pacific Ocean, and on the importance of opening commercial intercourse with those countries, &c. by A. H. Palmer.—BY THE STATE OF NEW YORK.

Meteorological Register kept at the Surveyor General's Office, Calcutta, for the month of January, 1849.—BY THE DEPUTY SURVEYOR GENERAL.

Map of the district of Pooree or southern Division of Cuttack.—BY THE GOVERNMENT OF BENGAL.

An Analytical Digest of all the reported cases decided in the Supreme Courts of Judicature in India, in the Courts of the Honourable East India Company and on appeal from India, by her Majesty in Council. By W. H. Morley. Part IV. of Vols. I. and II.—BY THE SAME.

*Exchanged.*

The London, Edinburgh, and Dublin Philosophical Magazine and Journal of Science, No. 221.

Journal Asiatique, No. 55, for June, 1848

*Purchased.*

Atlas to Alison's History of Europe, parts XX. and XXI.

Journal des Savants, for October, 1848.

The Zoology of the Voyage of H. M. S. Sulphur, Nos. IX. and X.

Comptes Rendus Hebdomadaires des Seances de l' Academie des Sciences. No. 18, for October, 1848.

*Donation to the Museum.*

From Bábu Rájendra Mallika. A group of terracotta figures, representing the manner in which thugs strangle their victims.

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# Meteorological Register kept at the Surveyor General's Office, Calcutta, for the Month of March, 1849.

Lat. 22° 33' 28". 33 N. Long. 88° 23' 42". 84 East. Mag. Variation 2° 28' 36" East. Mag. Dip. 27° 45'.

| Days of the Month. | Observations made at sunrise.        |                 |             |              |       |                    | Maximum Pressure observed at 11h. 50m. |                 |             |              |          |                    | Observations made at apparent noon.  |                 |             |              |       |                    | Observations made at 2h. 40m.        |                 |             |              |       |                    | Minimum Pressure observed at 4 p. m. |                 |             |              |       |                    | Observations made at sunset. |       |          |          |        |                 | Maximum and Minimum Thermometer. |              |                 | Rain Gauges. |              | Days of the month. |                 |             |              |                 |             |              |                 |             |              |                 |             |              |           |          |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |  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       |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |
|--------------------|--------------------------------------|-----------------|-------------|--------------|-------|--------------------|----------------------------------------|-----------------|-------------|--------------|----------|--------------------|--------------------------------------|-----------------|-------------|--------------|-------|--------------------|--------------------------------------|-----------------|-------------|--------------|-------|--------------------|--------------------------------------|-----------------|-------------|--------------|-------|--------------------|------------------------------|-------|----------|----------|--------|-----------------|----------------------------------|--------------|-----------------|--------------|--------------|--------------------|-----------------|-------------|--------------|-----------------|-------------|--------------|-----------------|-------------|--------------|-----------------|-------------|--------------|-----------|----------|------|------|-------|--------|--------|------|------|------|-------|--------|--------|------|------|------|-------|--------|--------|------|------|------|-------|--------|--------|------|------|------|-------|--------|--------|------|------|------|-------|--------|--------|------|------|------|-------|--------|--------|------|------|------|-------|--------|--------|------|------|------|-------|--------|--------|------|------|------|-------|--------|--------|------|------|------|-------|--------|--------|------|------|------|-------|--------|--------|------|------|------|-------|--------|--------|------|------|------|-------|--------|--------|------|------|------|-------|--------|--------|------|------|------|-------|--------|--------|------|------|------|-------|--------|--------|------|------|------|-------|--------|--------|------|------|------|-------|--------|--------|------|------|------|-------|--------|--------|------|------|------|-------|--------|--------|------|------|------|-------|--------|--------|------|------|------|-------|--------|--------|------|------|------|-------|--------|--------|------|------|------|-------|--------|--------|------|------|------|-------|--------|--------|------|------|------|-------|--------|--------|------|------|------|-------|--------|--------|------|------|------|-------|--------|--------|------|------|------|-------|--------|--------|------|------|------|-------|--------|--------|------|------|------|-------|--------|--------|------|------|------|-------|--------|--------|------|------|------|-------|--------|--------|------|------|------|-------|--------|--------|------|------|------|-------|--------|--------|------|------|------|-------|--------|--------|------|------|------|-------|--------|--------|------|------|------|-------|--------|--------|------|------|------|-------|--------|--------|------|------|------|-------|--------|--------|------|------|------|-------|--------|--------|------|------|------|-------|--------|--------|------|------|------|-------|--------|--------|------|------|------|-------|--------|--------|------|------|------|-------|--------|--------|------|------|------|-------|--------|--------|------|------|------|-------|--------|--------|------|------|------|-------|--------|--------|------|------|------|-------|--------|--------|------|------|------|-------|--------|--------|------|------|------|-------|--------|--------|------|------|------|-------|--------|--------|------|------|------|-------|--------|--------|------|------|------|-------|--------|--------|------|------|------|-------|--------|--------|------|------|------|-------|--------|--------|------|------|------|-------|--------|--------|------|------|------|-------|--------|--------|------|------|------|-------|--------|--------|------|------|------|-------|--------|--------|------|------|------|-------|--------|--------|------|------|------|-------|--------|--------|------|------|------|-------|--------|--------|------|------|------|-------|--------|--------|------|------|------|-------|--------|--------|------|------|------|-------|--------|--------|------|------|------|-------|--------|--------|------|------|------|-------|--------|--------|------|------|------|-------|--------|--------|------|------|------|-------|--------|--------|------|------|------|-------|--------|--------|------|------|------|-------|--------|--------|------|------|------|-------|--------|--------|------|------|------|-------|--------|--------|------|------|------|-------|--------|--------|------|------|------|-------|--------|--------|------|------|------|-------|--------|--------|------|------|------|-------|--------|--------|------|------|------|-------|--------|--------|------|------|------|-------|--------|--------|------|------|------|-------|--------|--------|------|------|------|-------|--------|--------|------|------|------|-------|--------|--------|------|------|------|-------|--------|-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|                    | Barometer reduced to 32° Fahrenheit. | Temperature.    |             |              | Wind. | Aspect of the Sky. | Barometer reduced to 32° Fahrenheit.   | Temperature.    |             |              | Wind.    | Aspect of the Sky. | Barometer reduced to 32° Fahrenheit. | Temperature.    |             |              | Wind. | Aspect of the Sky. | Barometer reduced to 32° Fahrenheit. | Temperature.    |             |              | Wind. | Aspect of the Sky. | Barometer reduced to 32° Fahrenheit. | Temperature.    |             |              | Wind. | Aspect of the Sky. | Maximum.                     | Mean. | Minimum. | Maximum. | Upper. | Elevations.     |                                  |              |                 |              |              |                    |                 |             |              |                 |             |              |                 |             |              |                 |             |              |           |          |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |  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       |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |      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  |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |
|                    |                                      | Of the Mercury. | Of the Air. | Of Wet Bulb. |       |                    |                                        | Of the Mercury. | Of the Air. | Of Wet Bulb. |          |                    |                                      | Of the Mercury. | Of the Air. | Of Wet Bulb. |       |                    |                                      | Of the Mercury. | Of the Air. | Of Wet Bulb. |       |                    |                                      | Of the Mercury. | Of the Air. | Of Wet Bulb. |       |                    |                              |       |          |          |        | Of the Mercury. | Of the Air.                      | Of Wet Bulb. | Of the Mercury. | Of the Air.  | Of Wet Bulb. |                    | Of the Mercury. | Of the Air. | Of Wet Bulb. | Of the Mercury. | Of the Air. | Of Wet Bulb. | Of the Mercury. | Of the Air. | Of Wet Bulb. | Of the Mercury. | Of the Air. | Of Wet Bulb. | Feet, 40. | Feet, 4. |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |      |      |       |        |        |      |
| 1                  | 29.974                               | 65.2            | 65.8        | 64.8         | S.    | Clear.             | 29.972                                 | 78.0            | 78.8        | 73.2         | S. S. W. | Clear.             | 29.972                               | 88.0            | 88.4        | 69.3         | S. W. | Clear.             | 29.972                               | 88.0            | 88.4        | 69.3         | S. W. | Clear.             | 29.972                               | 88.0            | 88.4        | 69.3         | S. W. | Clear.             | 29.972                       | 88.0  | 88.4     | 69.3     | S. W.  | Clear.          | 29.972                           | 88.0         | 88.4            | 69.3         | S. W.        | Clear.             | 29.972          | 88.0        | 88.4         | 69.3            | S. W.       | Clear.       | 29.972          | 88.0        | 88.4         | 69.3            | S. W.       | Clear.       | 29.972    | 88.0     | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 | 88.4 | 69.3 | S. W. | Clear. | 29.972 | 88.0 |





